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REPORT OF THE UNITED NATIONS WATER CONFERENCE

Mar del Plata, 14-25 March 1977

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New York, 1977

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Part one

DECISIONS OF THE CONFERENCE

Chapter I

MAR DEL PLATA ACTION PLAN

The United Nations Water Conference,

Realizing that the accelerated development and orderly administration of water resources constitute a key factor in efforts to improve the economic and social conditions of mankind, especially in the developing countries, and that it will not be possible to ensure a better quality of life and promote human dignity and happiness unless specific and concerted action is taken to find solutions and to apply them at the national, regional and international levels,

Recognizing the paramount role played by the Republic of Argentina as host to this historic Conference in the city of Mar del Plata and its great contribution to the success of the Conference which is crucial to the economic and social well-being of all peoples,

1. Urges strongly that the recommendations of this Conference be effectively implemented in good faith by all States;

2. Decides that these recommendations be known as the Mar del Plata Action Plan.

16th plenary meeting
25 March 1977

MAR DEL PLATA ACTION PLAN

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Resolutions

RECOMMENDATIONS

A. Assessment of water resources

1. In most countries there are serious inadequacies in the availability of data on water resources, particularly in relation to ground water and water quality. Hitherto, relatively little importance has been attached to its systematic measurement. The processing and compilation of data have also been seriously neglected.

2. TO IMPROVE THE MANAGEMENT OF WATER RESOURCES, GREATER KNOWLEDGE ABOUT THEIR QUANTITY AND QUALITY IS NEEDED. REGULAR AND SYSTEMATIC COLLECTION OF HYDROMETEOROLOGICAL, HYDROLOGICAL AND HYDROGEOLOGICAL DATA NEEDS TO BE PROMOTED AND BE ACCOMPANIED BY A SYSTEM FOR PROCESSING QUANTITATIVE AND QUALITATIVE INFORMATION FOR VARIOUS TYPES OF WATER BODIES. THE DATA SHOULD BE USED TO ESTIMATE AVAILABLE PRECIPITATION, SURFACE-WATER AND GROUND-WATER RESOURCES AND THE POTENTIALS FOR AUGMENTING THESE RESOURCES. COUNTRIES SHOULD REVIEW, STRENGTHEN AND CO-ORDINATE ARRANGEMENTS FOR THE COLLECTION OF BASIC DATA. NETWORK DENSITIES SHOULD BE IMPROVED; MECHANISMS FOR DATA COLLECTION, PROCESSING AND PUBLICATION AND ARRANGEMENT FOR MONITORING WATER QUALITY SHOULD BE REINFORCED.

3. To this end, it is recommended that countries should:

(a) Establish a national body with comprehensive responsibilities for water-resources data, or allocate existing functions in a more co-ordinated way, and establish data banks for the systematic collection, processing, storage and dissemination of data in agreed formats and at specified intervals of time;

(b) Expand and extend the network of hydrological and meteorological stations, taking a long-term view of future needs, following as far as possible the recommendations of the United Nations specialized agencies on standardization of instruments and techniques and comparability of data, and use existing meteorological and hydrological data series for the study of seasonal and annual fluctuations in climate and water resources. Such analysis could also be used in the planning and design of networks;

(c) Establish observation networks and strengthen existing systems and facilities for measurements and recording fluctuations in ground-water quality and level; organize the collection of all existing data on ground water (borehole logs, geological structure, and hydrogeological characteristics, etc.) systematically, index such data, and attempt a quantitative assessment so as to determine the present status of and gaps in knowledge; increase the search for, and determination of, the variables of aquifers, with an evaluation of their potential and the possibilities of recharge;

General note. Many recommendations for action contain references to national or country action, organization, policies and legislation. A number of countries with federal systems of government interpret such recommendations in the light of their constitutional division of responsibilities. Actions, organization, policies and legislation in these countries accordingly will be taken at the appropriate level of government.

(d) Standardize and organize as far as possible the processing and publication of data so as to keep the statistics up to date and take advantage of the observations made in stations operated by different institutions;

(e) Include consideration of diseases associated with water as an integral part of water assessments and the consideration of the interrelationships of water quality, quantity and related land use;

(f) Make periodic assessments of surface- and ground-water resources, including rainfall, evaporation and run-off, lakes, lagoons, glaciers and snowfields, both for individual basins and at the national level, in order to determine a programme of investigation for the future in relation to development needs; intensify programmes already under way and formulate new programmes wherever needed;

(g) Provide the means for national mechanisms so established to use, as appropriate, modern technologies (remote sensing, nuclear methods, geophysical techniques, analogue and mathematical models) in collecting, retrieving and processing data on the quantity or quality of water resources; manual data-processing methods may still satisfy the simple requirements of small collections, although it may be necessary to introduce various degrees of automation, ranging from small punch-card machines to large electronic computing systems;

(h) Standardize measurement techniques and instruments, and automate stations as appropriate; reference should be made to international standards and recommendations adopted by Governments through various international organizations;

(i) Support and promote national contributions to regional and international programmes on hydrological studies (e.g. the International Hydrological Programme and Operational Hydrological Programme);

(j) Co-operate in the co-ordination, collection and exchange of relevant data in the case of shared resources;

(k) Appropriate substantially increased financial resources for activities related to water resources assessment and to establish or strengthen related institutions and services as necessary;

(l) Establish or strengthen training programmes and facilities for meteorologists, hydrologists and hydrogeologists at professional and subprofessional levels;

(m) Prepare an inventory of mineral and thermal waters in countries possessing such resources with a view to studying and developing their industrial potential as well as their use as spas;

(n) Develop methods for the estimation of available water resources using aerological observations for the computation of the atmospheric water budget in large river basins, rivers and continents;

(o) Provide for the studying and analysing of hydrological data on surface and ground water by mutlidisciplinary teams so as to make adequate information available for planning purposes;

(p) Include the development of forecasting methods in quantitative and qualitative assessment, especially in the developing countries;

(q) Include effective decision-making methods in the management of water quality, based on techniques of natural quality regulation that have been proved in practice;

(r) Take specific national characteristics and conditions into account in different countries in assessing water quality and establishing water-quality criteria.

4. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(a) Surface water

(i) Offer technical assistance, at the request of interested Governments, to review the adequacy of existing networks and make available the use of advanced techniques such as remote sensing;

(ii) Offer technical assistance, including personnel, funds, equipment and training, to strengthen the networks and to establish laboratories for comprehensive water analysis;

(iii) Offer assistance and facilities for the establishment of data banks, processing and periodic publication of data by modern methods of electronic data processing, archiving and retrieval;

(iv) Help in making qualitative and quantitative assessments of surface-water resources, both gross and economically usable quantities, for different sectoral uses;

(v) Strengthen, in general, technical assistance programmes for the development of integrated national data systems.

(b) Ground water

(i) Offer assistance for the establishment or strengthening of observational networks for recording quantitative and qualitative characteristics of ground-water resources;

(ii) Offer assistance for the establishment of ground-water data banks and for reviewing the studies, locating gaps and formulating programmes of future investigations and prospection;

(iii) Offer help, including personnel and equipment, to make available the use of advanced techniques, such as geophysical methods, nuclear techniques, mathematical models, etc.

(c) Snow and ice

Advise on international standards and the establishment of observation networks regarding snow and ice in order to permit international exchange of this information, especially concerning international rivers.

B. Water use and efficiency

5. In many areas of the world, water is wasted or used in excess of actual needs. Often water is not used efficiently for agricultural purposes owing to losses in transit, unsuitable irrigation systems or lack of institutional co-ordination. Since irrigation is the principal water user in a great many countries, and since water and land capable of being cultivated are becoming increasingly scarce, there is a special need to achieve greater efficiency in the use of both these resources. At the same time, there is an imperative need in some regions to increase total agricultural production and productivity in order to increase food production. Furthermore, a large portion of the world's population does not have reasonable access to safe water supply and lacks hygienic waste-disposal facilities. In urban and industrial areas, the provision of adequate facilities and services for treatment of wastes generally lags behind the provision of water supplies, with consequent problems in water-quality management. In many parts of the world only a small part of the potential for hydroelectric power generation has been developed, even though the utilization of these resources may, in many cases, be very attractive as a result of the world energy situation. The growth of population also calls for ever larger areas for recreation and fisheries. In many regions, rivers also constitute one of the main means of communication and the potential for inland water transport should be developed. The value of inland water resources for food production should be recognized as important to protein supply.

Instruments to improve the efficiency of water use

6. Since water is a limited and valuable resource and since its development requires high investment, its use must be efficient and must secure the highest possible level of national welfare.

7. EFFECTIVE LEGISLATION SHOULD BE FRAMED TO PROMOTE THE EFFICIENT AND EQUITABLE USE AND PROTECTION OF WATER AND WATER-RELATED ECOSYSTEMS. PRICING AND OTHER ECONOMIC INCENTIVES SHOULD BE USED TO PROMOTE THE EFFICIENT AND EQUITABLE USE OF WATER.

8. To this end it is recommended that national institutions for water resource management should:

(a) Carry out research studies on the actual and potential quantities of water to be used by the various sectors, and encourage effective application of the results of these studies;

(b) Create incentives for increasing the efficiency of water use, such as financial assistance by Governments or credits for the adoption of new technologies, and introduce where appropriate scales of charges that reflect the real economic cost of water or that rationalize subsidies within the framework of a sound water policy;

(c) Evolve appropriate procedures for economic methods of reusing and recycling water, and where relevant introduce dual water systems for drinking and other uses;

(d) Enforce clear punitive arrangements to encourage the reduction or elimination of contaminant discharges which do not conform to standards, and provide adequate powers of applying deterrents and punishments;

(e) Promote, and develop by means of suitable incentives and appropriate policies, the efficiency of waste-water purification systems and the adoption of less polluting technologies;

(f) Take measures to encourage the use in productive activities of technologies which consume little water or which reuse it;

(g) Because water is a valuable and scarce resource deliberate administrative policies should be established, such as measuring supplies, licensing diversions, charging for water and penalizing wasteful and polluting acts;

(h) Encourage the use of associations of water users or other local community organizations to instil a collective responsibility in the decision-making process for the programming, financing and care in the use of water;

(i) Use school programmes and all public media to disseminate information concerning proper water use practices.

Efficiency and efficacy in regulation and distribution of the resources

9. NATIONAL MECHANISMS FOR THE MANAGEMENT OF WATER RESOURCES SHOULD APPLY THE BEST MEASURES TO IMPROVE THE EXISTING SYSTEMS AND THE BEST AVAILABLE TECHNIQUES FOR PLANNING AND DESIGN OF CONSERVATION AND DISTRIBUTION SYSTEMS IN THE MOST EFFICIENT WAY AND SHOULD EQUALLY ATTEND TO PROPER MAINTENANCE, CONTROL AT THE REGIONAL, NATIONAL AND FARM LEVEL AND OPERATION OF DELIVERY SYSTEMS TO INCREASE EFFICIENCY.

10. To this end, it is recommended that:

(a) Measures be taken to utilize ground-water aquifers in the form of collective and integrated systems, whenever possible and useful, taking into account the regulation and use of surface-water resources. This will provide an opportunity to exploit the ground-water aquifers to their physical limits, to protect spring and ground water from overdraught and salinity, as well as to ensure proper sharing of the resources;

(b) Studies should explore the potential of ground-water basins, the use of aquifers as storage and distribution systems, and the conjunctive use of surface and subsurface resources to maximize efficacy and efficiency;

(c) Systems analysis and modelling techniques should be applied to improve efficiency and efficacy in storage operation and distribution systems;

(d) Studies should explore further the possibility of effecting interbasin transfers of water; special attention should be given to environmental impact studies;

(e) Measures should be taken to ensure systematic planning of the distribution of water among the various users as a prerequisite for full and rational utilization of the volume of water available for exploitation;

(f) Programmes should be strengthened for the dissemination of existing information and experience;

(g) Studies should explore the extent to which new effluents generated from new demands will effectively reduce the scale of projected resource development.

Measurement and projections of water demand

11. In many countries no systematic measurements are being made for planning purposes concerning the use and consumption of water by sectors. The absence of this information has hampered the use of more sophisticated methods of estimating future requirements. Where projections have been made they have not been based on uniform norms or comparable methodologies.

12. IN ORDER TO PROJECT FUTURE WATER NEEDS IT IS DESIRABLE TO HAVE DATA ON USE AND CONSUMPTION AND QUALITY BY TYPE OF USER AND ALSO THE INFORMATION NECESSARY TO ESTIMATE THE EFFECT OF THE APPLICATION OF DIFFERENT POLICY INSTRUMENTS (TARIFFS, TAXES, ETC.) IN INFLUENCING THE VARIOUS AREAS OF DEMAND. THE DEMAND FOR WATER FOR DIFFERENT PURPOSES SHOULD BE ESTIMATED AT DIFFERENT PERIODS OF TIME IN CONFORMITY WITH NATIONAL DEVELOPMENT GOALS TO PROVIDE THE BASIS AND THE PERSPECTIVE FOR THE PLANNED DEVELOPMENT OF AVAILABLE WATER RESOURCES.

13. To this end, it is recommended that national bodies responsible for water resource management should:

(a) Initiate action to estimate the demand for water for different purposes, e.g., community water supply, agriculture, industry hydroelectricity, etc.;

(b) Ensure that statistics on the use and consumption of water should be organized, improved and amplified on the basis of those prepared by the existing services, supplemented by censuses, surveys, etc.; censuses on productive activities should include information on volumes of water used, sources of supply, coefficients of reuse, and quality data;

(c) Identify the targets to be achieved over different periods of time, taking into consideration the anticipated population growths, and the priority to be given in such matters as the number of people to be served with reasonable access to safe water supply; areas to be irrigated under different crops, and specific production per unit of water; and the units of hydropower to be installed to satisfy anticipated demand;

(d) Endeavour, as far as is practicable, to adopt the norms and methodologies recommended by the United Nations in making such demand projections;

(e) Base their approach to long-term demand estimates on the use of methodologies involving models which include the population and population location variable. In this context, countries should also take into account an evaluation of the over-all demand for water-consuming basic goods and services on the part of the population;

(f) Consider conservation as an explicit policy, bearing in mind changes in demand, water-use practices, lifestyles and settlement patterns;

(g) Evolve appropriate methodology for the management of demand, using suitable concepts, such as "risk indices".

14. International organizations and other supporting bodies should, as appropriate, assist, at the request of countries or subregional intergovernmental organizations, in the drawing up of demand projections for countries as well as for river basins in accordance with the commonly accepted norms and techniques.

Community water supply and waste disposal

15. IN ORDER TO IMPLEMENT RECOMMENDATION C. 12 OF HABITAT: UNITED NATIONS CONFERENCE ON HUMAN SETTLEMENTS, 1/ THE DECADE 1980-1990 SHOULD BE DESIGNATED THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE AND SHOULD BE DEVOTED TO IMPLEMENTING THE NATIONAL PLANS FOR DRINKING WATER SUPPLY AND SANITATION IN ACCORDANCE WITH THE PLAN OF ACTION CONTAINED IN RESOLUTION II BELOW. THIS IMPLEMENTATION WILL REQUIRE A CONCERTED EFFORT BY COUNTRIES AND THE INTERNATIONAL COMMUNITY TO ENSURE A RELIABLE DRINKING-WATER SUPPLY AND PROVIDE BASIC SANITARY FACILITIES TO ALL URBAN AND RURAL COMMUNITIES ON THE BASIS OF SPECIFIC TARGETS TO BE SET UP BY EACH COUNTRY, TAKING INTO ACCOUNT ITS SANITARY, SOCIAL AND ECONOMIC CONDITIONS.

16. To this end it is recommended that countries should:

(a) Set targets for community water supply and waste disposal and formulate specific action programmes to attain them, while evaluating the progress made at regular intervals;

(b) Establish standards of quality and quantity that are consistent with the public health, economic and social policies of Governments, ensuring by appropriate measures, duly applied, that those standards are observed;

(c) Ensure the co-ordination of community water-supply and waste-disposal planning with over-all water planning and policy as well as with over-all economic development;

(d) Adopt policies for the mobilization of users and [illegible] in the planning, financing, construction, operation and maintenance of projects for the supply of drinking water and the disposal of wastewater

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1/ Report of Habitat: United Nations Conference on Human Settlements (United Nations publication, Sales No.: E.76.IV.7), chap. II.

(e) Consider carefully inequalities in the standard of drinking water and sewerage services among the various sectors of the population. As far as possible, design programmes so as to provide basic requirements for all communities as quickly as possible, generally deferring the provision of improved services to a subsequent stage. Priority should be given to the provision of drinking water and sewerage services in areas where the quality and quantity of water supplied is inadequate, for instance, in rural areas and urban fringe areas populated by low-income groups;

(f) Ensure that the allocation of funds, of other resources and of all forms of economic incentives to community water-supply and sanitation programmes reflects the urgency of the needs and the proportion of the population affected;

(g) Promote the construction of facilities by granting low-interest loans or subsidies to communities and to other entities concerned with water supply and sanitation;

(h) Provide, where needed, additional well-drilling capability or other equipment for the establishment of local drinking-water supply facilities;

(i) Review the organizational infrastructure for community water supply and sanitation and set up, where it is considered appropriate, a separate department for this purpose;

(j) Prepare long-term plans and specific projects with detailed financial implications;

(k) Develop a financing system capable of mobilizing the resources needed for the implementation of the national programme for water supply and sanitation, as well as for the operation and maintenance of these services, for instance, by a system of revolving funds to ensure continued financial support for the execution of long-term programmes. This system should make it possible to bridge the gap between production costs and payment capacities;

(l) Provide mutual assistance in the transfer and application of technologies associated with these programmes;

(m) Carry out special water-supply and waste-treatment programmes as national or regional undertakings or as activities of non-profit organizations, such as users' associations, where local resources do not make it possible to achieve the desired goals;

(n) Adopt pricing policies and other incentives to promote the efficient use of water and the reduction of waste water, while taking due account of social objectives;

(o) Seek to promote in rural areas with low population density, where it seems appropriate, individual water-supply and waste-water disposal systems, taking account of sanitary requirements;

(p) Carry out a programme of health education, parallel with the development of community water supply and sanitation, in order to heighten the people's awareness with respect to health;

(q) Establish, at the national level, training programmes to meet immediate and future needs for supervisory staff;

(r) Provide inventory and protection of water-supply sources;

(s) Provide additional facilities and possibilities for drinking water supply during natural hazards;

(t) Use water effectively, reduce losses, equalize water prices by purposes for which the water is used over wide areas and reduce water costs due to reorganization models of some countries' water-supply arrangements so as to strengthen the financial management basis of supplies in metropolitan, urban and rural areas. Develop new concepts, such as the use of advanced water-treatment techniques, the utilization of low-quality sources and the re-use of waste water. These trends (reorganization and the use of new concepts) need to be encouraged where they are found to be necessary and desirable. Rural water-supply projects and programmes for implementing them on a priority basis are being undertaken in some countries and should be encouraged in others to achieve the targets in the field of community water supplies set by Habitat: United Nations Conference on Human Settlements.

17. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Provide technical assistance to countries in the preparation of long-term plans and specific projects;

(ii) Consider adapting their criteria for financial assistance in accordance with the economic and social conditions prevailing in the recipient countries;

(iii) Promote research, development and demonstration projects for reducing the costs of urban and rural water-supply and waste-disposal facilities;

(iv) Promote public health education;

(v) Support research, development and demonstration in relation to predominant needs, particularly:

a. Low-cost ground-water pumping equipment;

b. Low-cost water and waste-water treatment processes and equipment, with emphasis on the use of materials and skills likely to be available to rural communities for installation, operation and maintenance;

(vi) Strengthen the exchange of information, inter alia, by arranging expert meetings, and development of a clearing-house mechanism.

Agricultural water use

18. THE INCREASE OF AGRICULTURAL PRODUCTION AND PRODUCTIVITY SHOULD BE AIMED AT ACHIEVING OPTIMUM YIELD IN FOOD PRODUCTION BY A DEFINITE DATE, AND AT A SIGNIFICANT IMPROVEMENT IN TOTAL AGRICULTURAL PRODUCTION AS EARLY AS POSSIBLE. MEASURES TO ATTAIN THESE OBJECTIVES SHOULD RECEIVE THE APPROPRIATE HIGH PRIORITY. PARTICULAR ATTENTION SHOULD BE GIVEN TO LAND AND WATER MANAGEMENT BOTH UNDER IRRIGATED AND RAINFED CULTIVATION, WITH DUE REGARD TO LONG-TERM AS WELL AS SHORT-TERM PRODUCTIVITY. NATIONAL LEGISLATION AND POLICIES SHOULD PROVIDE FOR THE PROPERLY INTEGRATED MANAGEMENT OF LAND AND WATER RESOURCES. COUNTRIES SHOULD, WHEN REVIEWING NATIONAL POLICIES, INSTITUTIONS AND LEGISLATION, ENSURE THE CO-ORDINATION OF ACTIVITIES AND SERVICES INVOLVED IN IRRIGATION AND DRAINAGE DEVELOPMENT AND MANAGEMENT. IT IS NECESSARY TO EXPAND THE USE OF WATER FOR AGRICULTURE TOGETHER WITH AN IMPROVEMENT IN EFFICIENCY OF USE. THIS SHOULD BE ACHIEVED THROUGH FUNDING, PROVIDING THE NECESSARY INFRASTRUCTURE AND REDUCING LOSSES IN TRANSIT, IN DISTRIBUTION AND ON THE FARM, AND AVOIDING THE USE OF WASTEFUL IRRIGATION PRACTICES, TO THE EXTENT POSSIBLE. EACH COUNTRY SHOULD APPLY KNOWN TECHNIQUES FOR THE PREVENTION AND CONTROL OF LAND AND WATER DEGRADATION RESULTING FROM IMPROPER MANAGEMENT. COUNTRIES SHOULD GIVE EARLY ATTENTION TO THE IMPROVEMENT OF EXISTING IRRIGATION AND DRAINAGE PROJECTS.

19. In this context, countries should:

(a) Bear in mind principles of integrated land and water management when reviewing national policies, administrative arrangements and legislation, and pay heed to the need to augment present levels of agricultural production;

(b) Undertake or continue studies on the relationship between land use and the elements of the hydrological cycle at the national and international levels;

(c) Consider appropriate incentives such as safeguarding water rights for farmers and encourage holders of irrigated land to adopt management practices compatible with long-term resource management requirements;

(d) Plan and carry out irrigation programmes in such a way as to ensure that surface and subsurface drainage are treated as integral components and that provision of all requirements is co-ordinated with a view to optimizing the use of water and associated land resources;

(e) Provide financial resources and qualified manpower services for better water-use and management practices, proper maintenance, control and operation of distribution systems, and joint use of surface and ground water and eventually waste water, paying due attention to the needs of small-scale agriculture;

(f) Intensify work on determining crop-water requirements, integrate schemes for swamp reclamation and drainage in schemes for comprehensive river development, bearing in mind their effect on hydrological régime and the environment; give due attention to problems of salinity intrusion, particularly in coastal areas, and integrate measures for salinity control;

(g) Give attention to problems of soil and water conservation through good management of watershed areas which includes a rational crop distribution, improvement of pastures, reforestation, avalanche and torrent control, as well as the introduction of appropriate agricultural soil conservation practices, taking into account the economic and social conditions existing in the respective watershed areas;

(h) Adopt appropriate pricing policies with a view to encouraging efficient water use, and finance operation and maintenance costs with due regard to social objectives;

(i) Adopt appropriate measures for instructing and encouraging water users in efficient animal or farm husbandry and farm management. Particular attention should be paid to groups not reached by formal education;

(j) Take steps to complete irrigation and drainage projects currently under construction as expeditiously as possible, so that benefits on past investment accrue without delay;

(k) Take related health and environmental aspects into account in the planning and management of agricultural water use.

20. To this end it is recommended that:

(a) The institutional machinery responsible for water management should possess sufficient means and powers for the management of water for agricultural purposes, bearing in mind the physical interdependence of surface and ground water and in accordance with all its uses;

(b) Measures should be adopted for the supervision and control of water distribution and use, taking into account livestock and irrigated crop farming needs in keeping with the type of crop, soil and zone, the level of agricultural technology which can be attained, and the risk of soil erosion and salination of the soil and water, with the adoption, as far as possible, of arrangements to measure the amount of water supplied;

(c) The main cause of waste in the use of water should be identified and corrected, but also the limitations on the adoptions of sophisticated - even if more efficient - irrigation methods should be taken into consideration;

(d) Steps should be taken to increase the efficiency of water use in existing irrigation systems by improving watercourses, land levelling and improving water management on farms and in distributaries;

(e) Irrigation plans should be formulated (preferably by stages) which co-ordinate the implementation of the infrastructure with rural development and the promotion of suitable technology, inter alia, control of water-associated disease; the improved management of soils; the introduction of new species; and provision for the training of personnel and the use of the necessary technical assistance;

(f) Agricultural practices that will regulate the run-off in humid areas should be promoted, particularly where periods of heavy rains alternate with periods of drought, with a view to improving the efficiency of measures against flooding and achieving better organization and regulation of water supplies;

(g) Irrigation projects should be based on detailed soil investigations and consequent land classification;

(h) More attention should be given to procedures for more effective utilization of water at the village level, such as through better irrigation practices, the appropriate use of mulch for kitchen gardens as well as cash crops, and where feasible, the use of companion cropping. These and other measures can extend the responsible use of water, improve agricultural production and nutrition, and ease the onerous conditions of agricultural labour of special importance to the rural women, on whom so many burdens fall;

(i) In the strategy for the development of new irrigation facilities, a judicious combination of major, medium and minor schemes would be desirable;

(j) A more efficient use of water per unit of agricultural product is desirable;

(k) In the execution of schemes to combat salinity and waterlogging, economic and policy issues need to be taken into account in the planning procedures and the effected farmers need to be involved in the planning and implementation of schemes;

(l) High priority should be given to the adoption of urgent measures for soil and water conservation within the framework of integrated land and water management in order to increase agricultural production without destroying those resources.

21. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Assist countries in the preparation of master plans and programmes and definitive project reports on the use of water in agriculture, including land use, irrigation, dry farming techniques, drainage, flood control, salinity intrusion, swamp reclamation and soil and water conservation;

(ii) Strengthen the exchange of information, inter alia, through the organization of expert and other meetings.

Fisheries

22. PLANS FOR THE USE OF WATER RESOURCES AND FOR TERRITORIAL DEVELOPMENT SHOULD TAKE INTO ACCOUNT THE USE OF WATER FOR FISHERIES, IN ORDER TO INCREASE THE SUPPLY OF PROTEINS TO THE WORLD POPULATION.

23. To this end it is recommended that countries should:

(a) Protect, conserve and exploit rationally their fisheries resources, avoiding the effects of natural or human pollution and co-ordinating the relevant regulations with interested countries sharing water resources;

(b) Develop research and information dissemination programmes concerning fisheries;

(c) Promote intensive fisheries activities including aquaculture by establishing the needed additional infrastructures and facilities, at the same time avoiding the introduction of unsuitable species into the local ecosystem;

(d) Where a reasonable cost-benefit ratio is expected make provision for fish passage facilities and other actions needed to avoid damage to aquatic systems, as initial elements of project design and funding;

(e) Regulate, restrict or prohibit the use of certain polluting substances, especially toxic and organoleptic substances, to prevent their entry into waters. These measures are required to protect human health and the aquatic ecosystems upon which life is dependent.

24. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Assist countries in preparing plans, programmes and facilities for the protection, development and utilization of fishery resources in connexion with water resources development in order to augment world protein supplies;

(ii) Assist countries in research and information dissemination programmes in support of increasing fishery production;

(iii) Assist countries in controlling toxic and other pollutants damaging to aquatic systems and to human health.

Industrial water use

25. IN MANY COUNTRIES PROBLEMS ASSOCIATED WITH THE USE OF WATER IN INDUSTRY NEED TO BE STUDIED IN GREATER DEPTH AND IN A MORE SYSTEMATIC AND COMPREHENSIVE MANNER THAN HITHERTO, IN BOTH THEIR QUANTITATIVE AND THEIR QUALITATIVE ASPECTS, INCLUDING QUESTIONS OF INPUT AND OUTPUT QUALITY, LEVEL OF TREATMENT REQUIRED, IF ANY, AND RECYCLING OF WATER. THESE MATTERS MAY BE CRUCIAL TO THE ATTAINMENT OF INDUSTRIALIZATION TARGETS IN THE DEVELOPING COUNTRIES.

26. To this end it is recommended that countries should:

(a) Initiate studies on the present and potential use of water by specific industries, including such aspects as recycling, substitution for and reduction of water inputs and use of low-quality waters for cooling and waste management;

(b) Make an assessment of factors relating to the quality and quantity of water and industrial wastes as important criteria in decision-making on industrial locations within the framework of land-use planning;

(c) Evolve appropriate procedures for economic methods of re-using and recycling water, including corrective treatment for industries, and explore the possibilities for using waters of qualities commensurate with the purposes for which they are needed;

(d) Take into account the water requirements of industries in the planning and formulation of water-development projects, paying due attention to the necessary safeguards against adverse health and environmental impacts arising from industrial activities and to the needs of small-scale and rural industries;

(e) Include waste treatment or other appropriate measures to eliminate or reduce pollution as an integral part of municipal and industrial water-supply systems;

(f) Provide stimulating investments and other economic incentives and regulations to use water efficiently, to treat wastes at their source and, where advantageous, jointly with domestic waste;

(g) Adopt the necessary measures to ensure that the use and disposal of effluents is consistent with the requirements of health and environmental quality;

(h) Carry out a policy aimed at promoting research and the establishment of industrial technologies that use little water and produce little or no waste and also of technical processes for the recovery of usable substances in waste waters;

(i) Take note of the targets and recommendations of the Lima Declaration and Plan of Action on Industrial Development and Co-operation evolved at the Second General Conference of the United Nations Industrial Development Organization in 1975, which should greatly expand use of water by industry in certain countries.

27. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Assist countries in making an assessment of water requirements for industrial purposes in the different countries, subregions and river basins, and evolve economical methods for the re-use and recycling of water, where necessary;

(ii) Strengthen programmes for the exchange of information, inter alia, by arranging expert and other meetings;

(iii) Support or arrange research and study programmes, particularly in relation to pricing policy and also methods of water and waste-water treatment which are conducive to a reduction in cost of treating effluents;

(iv) Evolve a common international statistical data base that will relate water use, particularly the effects of water quality available, to process technologies, and the degree of re-use and recycling.

Hydroelectric power generation

28. IN THE FORMULATION OF PLANS FOR THE DEVELOPMENT OF THE ELECTRICITY SECTOR, IT IS NECESSARY TO GIVE ATTENTION IN ALL CASES TO THE ADVANTAGES OFFERED BY MULTIPURPOSE HYDROELECTRIC PROJECTS, INCLUDING PUMPED STORAGE, THAT ENSURE THE CONTINUED ENJOYMENT OF THIS RENEWABLE RESOURCE WITHOUT SERIOUS DAMAGE TO HEALTH AND THE ENVIRONMENT.

29. To this end it is recommended that countries should:

(a) Make national inventories of potential hydroelectric projects to be promoted and supplemented with a view to determining which projects, because of their characteristics, can satisfy electricity and water-flow demands on a long-term basis;

(b) Undertake studies on the multiple and integrated development of the water resources in watersheds with hydroelectric potential;

(c) Integrate plans for the development of hydropower generation with the over-all development plans for both the energy and water sectors, taking into account the potential savings in foreign exchange which can accrue therefrom;

(d) Evaluate the impact of the non-consumptive use of water for power generation on other consumptive uses in order to harmonize the two aspects of water use;

(e) Prepare detailed project reports for specific projects to facilitate their financing;

(f) Collect data on the present and future use of water for power generation, so that this aspect of power development can become an integral component of multipurpose river basin development;

(g) Include in studies on the assessment and feasibility of hydroelectric projects potential tourism, recreational, ecological and psychological benefits, for commercial and social purposes, as well as their multiplier effect on the national economy;

(h) Encourage small-scale hydroelectric installation to meet local energy needs, whenever economically, environmentally and socially acceptable;

(i) Give consideration to pumped storage hydroelectric projects as a source of peaking power;

(j) In addition to the undertaking of new hydropower projects, optimize power generation from existing hydro-projects by improved reservoir regulation.

30. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Assist in preparing long-term plans for utilizing the potential for power development in river basins in the different countries;

(ii) Assist in preparing definite project reports to help Governments in seeking investment finance for specific projects;

(iii) Promote the elaboration of detailed load surveys at the national and subregional levels and in individual river basins.

Inland navigation

31. PLANS FOR THE USE OF WATER RESOURCES AND FOR TERRITORIAL DEVELOPMENT SHOULD TAKE ACCOUNT OF THE USE OF WATER FOR INLAND NAVIGATION CONSISTENT WITH OTHER OBJECTIVES OF MULTIPURPOSE DEVELOPMENT AND WITH SPECIAL REGARD TO THE NEEDS OF LAND-LOCKED COUNTRIES.

32. To this end it is recommended that countries should:

(a) Carry out studies which include the use of rivers and the modernization of port installation and shipping equipment as an integral part of combined regional land and water transport systems, taking into consideration the needs of the land-locked countries;

(b) Ensure in programmes of comprehensive and integrated multipurpose river basin development, the design and maintenance or improvement of navigation systems which are based upon consideration of the special hydraulic and other technical requirements necessary to efficient inland navigation;

(c) Maintain programmes for the collection of hydrometeorological data in river basins used for navigation in order to provide adequate systems for prediction of water levels;

(d) Adopt regulations which make it compulsory to instal equipment in ships to avoid the discharge of untreated organic and chemical effluents into the water and to construct installations in ports to receive and treat tank and bilge wastes. Furthermore, the dumping of radio-active wastes should be prohibited;

(e) Ensure that all vessels transporting oil or hazardous substances comply with the highest safety standards so that accidental spills may be avoided to the greatest extent possible. Severe penalties for non-compliance are necessary.

33. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Assist countries in preparing plans, programmes and projects for inland water transport, especially taking into consideration the needs of the land-locked countries;

(ii) Assist countries in the construction of basic facilities such as navigation channels and locks and the maintenance of waterways, mapping, navigation charts, etc.;

(iii) Assist countries in building up the requisite technology within the countries.

C. Environment, health and pollution control

34. Large-scale water-development projects have important environmental repercussions of a physical, chemical, biological, social and economic nature, which should be evaluated and taken into consideration in the formulation and implementation of water projects. Furthermore, water-development projects may have unforeseen adverse consequences affecting human health in addition to those associated with the use of water for domestic purposes. Water pollution from sewage and industrial effluents and the use of chemical fertilizers and pesticides in agriculture is on the increase in many countries. It is also recognized that control measures regarding the discharge of urban, industrial and mining effluents are inadequate. Increased emphasis must be given to the question of water pollution, within the over-all context of waste management.

Environment and health

35. IT IS NECESSARY TO EVALUATE THE CONSEQUENCES WHICH THE VARIOUS USES OF WATER HAVE ON THE ENVIRONMENT, TO SUPPORT MEASURES AIMED AT CONTROLLING WATER-RELATED DISEASES, AND TO PROTECT ECOSYSTEMS.

36. To this end it is recommended that countries should:

(a) Review the implementation of the recommendations of the 1972 United Nations Conference on the Human Environment relating to the water sector (recommendations 51-55) 2/ and take such action as is necessary to accelerate the pace of their implementation;

(b) Arrange for scientific, systematic and comprehensive studies of the environmental impact of water projects as an integral part of the process of preparing project reports for water development;

(c) Ensure an interdisciplinary approach to such studies so that the full and all-round impact of the water projects can be assessed in a more comprehensive, effective and co-ordinated manner than would otherwise be possible;

(d) Promote research and systematic measurement of the effects that development projects have had on the environment and on other natural resources;

(e) Develop suitable procedures to evaluate the qualitative and quantitative environmental impacts of water projects;

(f) Investigate the possibility of the spread of diseases related to water as a result of large-scale water projects as the project is formulated and take appropriate action in conjunction with the implementation of the project so that no untoward health hazards result from its implementation;

2/ Report of the United Nations Conference on the Human Environment (United Nations publication, Sales No.: E.73.II.A.14), chap. II, sect. B.

(g) Ensure that due consideration is given to fisheries, wildlife protection and preservation and water-weed control in the planning and construction of water projects;

(h) Develop and regulate the establishment of facilities for tourism and recreation in conjunction with all natural and man-made reservoirs, taking special precautions in the case of drinking-water supply reservoirs;

(i) Promote rational methods of treatment and management of surface watersheds and their vegetation cover so as to avoid erosion and the consequent sedimentation in reservoirs, watercourses and river banks, and to normalize run-off patterns;

(j) Take into account the need for improvement of catchment areas of the national hydrological basins which generate the water resources to be used, in keeping with their degree of degradation and provide for the costs of such measures;

(k) Improve institutional arrangements for the observation and control of the impact that public and other works may have on water resources and the environment; and promote the participation of all governmental agencies responsible for health and environment from the earliest stages of planning, both during the implementation and the subsequent monitoring of any socio-economic development scheme and in the formulation and application of relevant legislation and regulations;

(l) Identify, protect and preserve superlative examples of unique and scenic lakes, rivers, springs, waterfalls, wildlife and natural areas which embody inspirational national heritage values, and provide opportunities for international tourism;

(m) Recognize that fresh-water and coastal wetlands are among the most vital and productive of ecological systems because of their values for flood-water storage, as breeding grounds for fish and wildlife, and for their recreational and scientific use. Nations are encouraged to develop plans to ensure that important wetland areas are not indiscriminately destroyed;

(n) Recognize that while monetary values are often difficult to assign to the benefits of water as a recreational, cultural, aesthetic and scientific resource, the benefits are none the less real and substantial, and should be taken into consideration in the environmental assessment of development projects;

(o) Recognize that water planning and management should be based on ecological knowledge. Every water project must have as one of its goals to eliminate negative effects on public health and minimize the negative environmental impact; new water-supply projects must be linked with hygienic excreta-disposal practices, in order to provide the community with safe drinking water;

(p) Study and investigate water-related diseases in general and the influence of water as a working environment on those working in it;

(q) Recognize that the range of environmental considerations at present receiving attention in relation to water projects needs to be expanded in order to

become more comprehensive and include not only physical, chemical or biological changes, but also the resulting social and economic changes;

(r) Recognize that to mitigate adverse environmental repercussions of water discharge from thermal and atomic power stations, cooling systems and hydrotechnical design practices and procedures need to be improved to reduce potential hazards;

(s) Recognize that environmental planning is being undertaken not only at the national or river-basin level but also at the level of specific geographic regions such as estuaries, coastal zones, etc., wherever such an approach is warranted by the nature of the problems inherent in such regional development. This should be done not only in relation to water projects in isolation, but in close liaison with other related activities like town and country planning or regional development;

(t) Recognize that in dealing with problems of public health, a careful evaluation is needed of potential conflict situations such as the chlorination of sewage effluents and the chlorination of drinking-water production so that epidemiological consequences are avoided.

37. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Strengthen the exchange of information;

(ii) Support research and studies on the techniques for carrying out ecological surveys and on conditions affecting the incidence of diseases associated with aquatic environments;

(iii) Implement the recommendations of the 1972 United Nations Conference on the Human Environment relating to the water sector (recommendations 51-55); 3/

(iv) Make an assessment of the environmental impact of water projects and help to take suitable action to prevent undesirable consequences;

(v) Identify and protect waterscapes of international significance within the framework of the UNESCO Convention for the Protection of the World Cultural and Natural Heritage. 4/

Pollution control

38. CONCERTED AND PLANNED ACTION IS NECESSARY TO AVOID AND COMBAT THE EFFECTS OF POLLUTION IN ORDER TO PROTECT AND IMPROVE WHERE NECESSARY THE QUALITY OF WATER RESOURCES.

39. To this end it is recommended that countries should:

3/ Ibid., chap. II, sect. B.

4/ Adopted by the UNESCO General Conference on 16 November 1972.

(a) Conduct surveys of present levels of pollution in surface-water and ground-water resources, and establish monitoring networks for the detection of pollution;

(b) Establish, where necessary, laboratories for the systematic and routine analysis of water samples, including physical, chemical, bacteriological and biological analysis;

(c) Regulate the discharge of industrial, urban and mining wastes into bodies of water by the establishment of the necessary control measures in the context of an over-all water management policy, taking account of qualitative and quantitative aspects;

(d) Apply such legislation and regulatory measures and such systems of incentive charges as to the discharge of pollutants that certain quality goals will be reached within certain periods of time. The discharge into the aquatic environment of dangerous substances that are toxic, persistent and bio-accumulative should be gradually eliminated;

(e) Devote careful attention to the availability of water and the effects of environmental pollution when deciding on the location and selection of facilities;

(f) Conduct research on and measurement of the pollution of surface and ground water by agricultural fertilizers and biocides with a view to lessening their adverse environmental impact;

(g) Adopt the general principle that, as far as possible, direct or indirect costs attributable to pollution should be borne by the polluter;

(h) Increase the number and improve the operation and establish comprehensive monitoring of facilities and technologies for the treatment of waste water, giving greater attention to alternative (especially low-energy) methods of waste treatment and land application or other economic use of wastes;

(i) Encourage the development and use of substances which minimize hazards to human health and the environment, taking into account in particular toxicity, biodegradability, bio-accumulation and eutrophication;

(j) Increase efforts to monitor and assess the effects of the deposition of airborne pollutants in water from distant sources and reduce the total emission of such pollutants, i.e. by applying the best available technology that is economically feasible;

(k) Harmonize and use, where possible, uniform criteria, methods and standards for assessing and monitoring water quality, compiling data and classifying waters with regard to their use;

(l) Prepare and continuously update a list of water pollutants and a harmonizing terminology in the field of water pollution control, in collaboration with existing international organizations engaged in similar work;

(m) Promote the use of infiltration techniques when the nature of the effluents and the terrain makes it possible to do so without endangering surface and ground-water resources;

(n) Set up adequate institutions, where necessary with appropriate co-ordinating machinery, and strengthen those that already exist, to enable them to be more effective in the fight against pollution;

(o) Apply appropriate land-use planning as a tool for preventing water pollution, especially in the case of ground water;

(p) Establish quality standards for the various beneficial uses of water, whenever possible, taking into account the degree of development and the social and economical conditions of each region;

(q) Ensure fast decontamination of water pollution during natural and man-made hazards;

(r) Counteract with all appropriate measures the introduction into water of toxic substances likely to result in environmental hazards such as DDT, polychlorinated biphenyl (PCB), mercury and cadmium, taking into account the special requirements of developing countries;

(s) Where practical, seriously encourage and conduct biological control research where chemicals are used in the control of water-related organisms;

(t) In combating industrial pollution, undertake a careful analysis of the cost-effectiveness ratio of the different measures proposed for pollution control and priority accorded to the method entailing the least cost;

(u) Recognize that studies need to be undertaken to evaluate the best possible approach to controlling pollution on an industry-by-industry or pollutant-by-pollutant basis, in accordance with national requirements in the light of the nature and level of industrial development;

(v) Recognize that techniques like simulation, parametric modelling and computerized analysis need to be developed to facilitate solutions to problems in the field of pollution control;

(w) With relation to the long-distance transportation of airborne pollution, especially acid precipitation, recognize that the different approaches to the control of the emission of relevant pollutants should be considered, bearing in mind the available range of technical solutions;

. . . . .

40. International organizations and other supporting bodies should, as appropriate and on request, assist developing countries by providing equipment, funds and personnel to enable them to determine quality levels and to face the problems posed by water pollution.

D. Policy, planning and management

41. Increased attention should be paid to the integrated planning of water management. Integrated policies and legislative and administrative guidelines are needed so as to ensure a good adaptation of resources to needs and reduce, if necessary, the risk of serious supply shortages and ecological damage, to ensure public acceptance of planned water schemes and to ensure their financing. Particular consideration should be given not only to the cost-effectiveness of planned water schemes, but also to ensuring optimal social benefits of water resources use, as well as to the protection of human health and the environment as a whole. Attention should also be paid to the shift from single-purpose to multipurpose water resources development as the degree of development of water resources and water use in river basins increases, with a view, inter alia, to optimizing the investments for planned water-use schemes. In particular, the construction of new works should be preceded by a detailed study of the agricultural, industrial, municipal and hydropower needs of the area concerned. Water-management plans may be prepared using systems analysis techniques and developed on the basis of already adopted indicators and criteria. This analysis would take into account the economic and social evolution of the basin and be as comprehensive as possible; it would include such elements as time horizon and territorial extent, and take into account interactions between the national economy and regional development, and linkages between different decision-making levels. National policies must provide for the modernization of existing systems to meet the requirements of the present day.

National water policy

42. In a number of countries, there is a need for the formulation of a national water policy within the framework of and consistent with the over-all economic and social policies of the country concerned, with a view to helping raise the standard of living of the whole population.

43. EACH COUNTRY SHOULD FORMULATE AND KEEP UNDER REVIEW A GENERAL STATEMENT OF POLICY IN RELATION TO THE USE, MANAGEMENT AND CONSERVATION OF WATER, AS A FRAMEWORK FOR PLANNING AND IMPLEMENTING SPECIFIC PROGRAMMES AND MEASURES FOR EFFICIENT OPERATION OF SCHEMES. NATIONAL DEVELOPMENT PLANS AND POLICIES SHOULD SPECIFY THE MAIN OBJECTIVES OF WATER-USE POLICY, WHICH SHOULD IN TURN BE TRANSLATED INTO GUIDELINES AND STRATEGIES, SUBDIVIDED, AS FAR AS POSSIBLE, INTO PROGRAMMES FOR THE INTEGRATED MANAGEMENT OF THE RESOURCE.

44. To this end it is recommended that countries should:

(a) Ensure that national water policy is conceived and carried out within the framework of an interdisciplinary national economic, social and environmental development policy;

(b) Recognize water development as an essential infrastructural facility in the country's development plans;

(c) Ensure that land and water are managed in an integrated manner;

(d) Improve the availability and quality of necessary basic information, e.g. cartographic services, hydrometry, data on water-linked natural resources and ecosystems, inventories of possible works, water demand projections and social cost;

(e) Define goals and targets for different sectors of water use, including provision of safe water-supply and waste-disposal facilities, provision for agriculture, stock-raising, industrial needs and transport by water, and development of hydropower in such a way as to be compatible with the resources and characteristics of the area concerned. In estimating available water resources, account should be taken of water re-use and water transfer across basins;

(f) Develop and apply techniques for identifying, measuring and presenting the economic, environmental and social benefits and costs of development projects and proposals. Decisions can then be based on these factors, appropriate distribution of costs can be determined, and the construction and operation of projects can be carried out in such a way that these matters receive continuous consideration at all stages;

(g) Undertake the systematic evaluation of projects already carried out, with a view to learning lessons for the future, particularly in relation to social benefits and ecological changes, which evolve slowly;

(h) Formulate master plans for countries and river basins to provide a long-term perspective for planning, including resource conservation, using such techniques as systems analysis and mathematical modelling as planning tools, wherever appropriate. Projects arising out of the national plans should be well investigated and appropriate priorities should be assigned to them;

(i) Maintain in the planning and management of national water resources as a fundamental aim and as a high priority the satisfaction of the basic needs of all groups of society with particular attention to the lowest income groups;

(j) Periodically review and adjust targets in order to keep pace with changing conditions. Long-term guidelines for water management might be prepared for periods of 10 to 15 years and should be compatible with master plans. Planning should be considered a continuous activity and long-term plans should be revised and completed periodically - a five-year period seems advisable in this respect;

(k) Undertake the training of personnel specializing in planning principles and methods as well as farmers and other users of water so that they are involved at every stage of the planning process. This should include training to improve the expertise in economic analysis so as to ensure that proper cost-allocation studies are undertaken;

(l) Evaluate water-tariff policies in accordance with general development policies and direct any readjustment and restructuring that may be found necessary, so that they may be effectively used as policy instruments to promote better management of demand while encouraging better use of available resources without causing undue hardship to poorer sections and regions of the community. Water charges should as far as possible to cover the costs incurred unless Governments as a policy choose to subsidize them;

(m) Document and share their experience in planning with others.

45. International organizations and other supporting bodies should, as appropriate, and on request, assist countries to:

(i) Evolve and formulate national water policies;

(ii) Strengthen the existing institutions at the national level and existing intergovernmental organizations at the subregional level, and create new institutions where needed;

(iii) Prepare national master plans and, where necessary, river-basin plans and identify projects;

(iv) Prepare feasibility reports for projects identified in such general planning studies, which have some prior assurance of financing by interested donor countries or agencies;

(v) Prepare definitive project reports where feasibility studies have been established;

(vi) Actively promote planning techniques and procedures by arranging information exchange, convening working groups and roving or country seminars, as appropriate, and by disseminating the results of relevant case studies and research studies;

(vii) Give urgent attention at the national, regional and international level to developing national expertise in the application of planning techniques by all appropriate means;

(viii) Promote various available measures and techniques in public participation and pay particular attention to ways of adapting appropriate techniques to the particular circumstances of countries.

Institutional arrangements

46. In many countries, water interests have been divided among numerous agencies without adequate co-ordination and without adequate links to other aspects of national planning.

47. INSTITUTIONAL ARRANGEMENTS ADOPTED BY EACH COUNTRY SHOULD ENSURE THAT THE DEVELOPMENT AND MANAGEMENT OF WATER RESOURCES TAKE PLACE IN THE CONTEXT OF NATIONAL PLANNING AND THAT THERE IS REAL CO-ORDINATION AMONG ALL BODIES RESPONSIBLE FOR THE INVESTIGATION, DEVELOPMENT AND MANAGEMENT OF WATER RESOURCES. THE PROBLEM OF CREATING AN ADEQUATE INSTITUTIONAL INFRASTRUCTURE SHOULD BE KEPT CONSTANTLY UNDER REVIEW AND CONSIDERATION SHOULD BE GIVEN TO THE ESTABLISHING OF EFFICIENT WATER AUTHORITIES TO PROVIDE FOR PROPER CO-ORDINATION.

48. To this end, it is recommended that countries should:

(a) Adapt the institutional framework for efficient planning and use of water resources and the use of advanced technologies where appropriate. Institutional organization for water management should be reformed whenever appropriate so as to secure adequate co-ordination of central and local administrative authorities. Co-ordination should include the allocation of resources with complementary programmes;

(b) Promote interest in water management among users of water; users should be given adequate representation and participation in management;

(c) Consider, where necessary, the desirability of establishing suitable organizations to deal with rural water supply, as distinct from urban water supply, in view of the differences between the two in technologies, priorities, etc.;

(d) Consider as a matter of urgency and importance the establishment and strengthening of river basin authorities, with a view to achieving a more efficient, integrated planning and development of the river basins concerned for all water uses when warranted by administrative and financial advantages;

(e) Secure proper linkage between the administrative co-ordinating agency and the decision-makers.

Legislation

49. Legislation in many countries, though often complex, lags behind modern water management practices and techniques and perpetuates an undesirable fragmentation of administrative responsibilities. Provisions which regulate water management are often contained in different laws and regulations. This may make it difficult to know and apply them. In some instances there are cases of incompatibility between legal provisions of a national character and regulations emanating from regional or local authorities, or between traditional rights and the State's role in controlling water resources.

50. EACH COUNTRY SHOULD EXAMINE AND KEEP UNDER REVIEW EXISTING LEGISLATIVE AND ADMINISTRATIVE STRUCTURES CONCERNING WATER MANAGEMENT AND, IN THE LIGHT OF SHARED EXPERIENCE SHOULD ENACT, WHERE APPROPRIATE, COMPREHENSIVE LEGISLATION, FOR A CO-ORDINATED APPROACH TO WATER PLANNING. IT MAY BE DESIRABLE THAT PROVISIONS CONCERNING WATER RESOURCES MANAGEMENT, CONSERVATION AND PROTECTION AGAINST POLLUTION BE COMBINED IN A UNITARY LEGAL INSTRUMENT, IF THE CONSTITUTIONAL FRAMEWORK OF THE COUNTRY PERMITS. LEGISLATION SHOULD DEFINE THE RULES OF PUBLIC OWNERSHIP OF WATER AND OF LARGE WATER ENGINEERING WORKS, AS WELL AS THE PROVISIONS COVERING LAND OWNERSHIP PROBLEMS AND ANY LITIGATION THAT MAY RESULT THEREFROM. IT SHOULD BE FLEXIBLE ENOUGH TO ACCOMMODATE FUTURE CHANGES IN PRIORITIES AND PERSPECTIVES.

51. To this end, it is recommended that:

(a) An inventory and a critical examination of rules (whether written or unwritten), regulations, decrees, ordinances and legal and legislative measures in the area of water resources and development should systematically be carried out;

(b) A review of existing legislation be prepared in order to improve and streamline its scope to cover all aspects pertaining to water resources management; protection of quality, prevention of pollution, penalties for undesirable effluent discharge, licensing, abstraction, ownership, etc.;

(c) Although legislation should generally be comprehensive, it ought to be framed in the simplest way possible, and be consistent with the need to spell out the respective responsibilities and powers of governmental agencies and the means for conferring rights to use water on individuals;

(d) Legislation should allow for the easy implementation of policy decisions which should be made in the public interest, while protecting the reasonable interests of individuals;

(e) Legislation should define the rules of public ownership of water projects as well as the rights, obligations and responsibilities and emphasize the role of public bodies at the proper administrative level in controlling both the quantity and quality of water. It should appoint and empower appropriate administrative agencies to carry out this controlling function and to plan and implement water-development programmes. It should also spell out, either in primary or subordinate legislation, administrative procedures necessary for the co-ordinated, equitable and efficient control and administration of all aspects of water resources, and land-use problems as well as the conflicts which may arise from them;

(f) Legislation should take into account the administrative capacity to implement it;

(g) Countries should document and share their experience so as to have a basis for possible improvement of their legislation;

(h) Priority should be accorded to the effective enforcement of the provisions of existing legislation, and where necessary, administrative and other arrangements should be strengthened and rendered more effective to achieve this objective.

52. International organizations and other supporting bodies should, as appropriate, and on request, assist countries to:

(i) Improve and streamline existing legislation and prepare new draft legislation; inter alia to establish professorships and institutes in water law;

(ii) Arrange the exchange of information and disseminate the results and experience of selected countries for the benefit of others.

Public participation

53. It is commonly acknowledged that decisions should be made in the light of the expressed views of those likely to be affected by the decision.

54. COUNTRIES SHOULD MAKE NECESSARY EFFORTS TO ADOPT MEASURES FOR OBTAINING EFFECTIVE PARTICIPATION IN THE PLANNING AND DECISION-MAKING PROCESS INVOLVING USERS AND PUBLIC AUTHORITIES. SUCH PARTICIPATION CAN CONSTRUCTIVELY INFLUENCE THE CHOICE BETWEEN ALTERNATIVE PLANS AND POLICIES. IF NECESSARY, LEGISLATION SHOULD PROVIDE FOR SUCH PARTICIPATION AS AN INTEGRAL PART OF THE PLANNING, PROGRAMMING, IMPLEMENTATION AND EVALUATION PROCESS.

55. To this end, it is recommended that:

(a) Countries should develop adequate legislative provisions, educational programmes and participatory activities that will increase public awareness and encourage public participation, as well as emphasize the value of water and the danger of its relative scarcity or abuse;

(b) Countries employing such measures and techniques should document and share their experience;

(c) Every effort should be made to convince the public that participation is an integral component in the decision-making process, and there should be a continuous two-way flow of information;

(d) In the field of community water supply and sanitation special emphasis should be given to the situation and the role of women.

Development of appropriate technology

56. In many developing countries efforts are being made to hasten and develop local and appropriate technologies using local experience and raw materials; to hasten economic development these efforts require encouragement, expansion, and financial and institutional support.

57. THE CONCEPT AND CONTENT OF APPROPRIATE TECHNOLOGY RELATED TO WATER-RESOURCE DEVELOPMENT AND MANAGEMENT SHOULD BE PERCEIVED IN THE CONTEXT OF EACH PARTICULAR SOCIO-ECONOMIC SITUATION AND ITS AVAILABLE RESOURCES. DEVELOPING COUNTRIES NEED TO BUILD UP TECHNOLOGICAL CAPABILITY AT THE NATIONAL AND REGIONAL LEVELS. PRIORITY SHOULD BE GIVEN TO TECHNOLOGIES OF LOW CAPITAL COST, AND THE USE OF LOCAL RAW MATERIALS AND RESOURCES TAKING ENVIRONMENTAL FACTORS INTO ACCOUNT. DEVELOPED COUNTRIES SHOULD ACCELERATE THE PROCESS OF TRANSFER OF EXPERIENCE AND KNOW-HOW, TECHNICAL ASSISTANCE AND TRAINING TO DEVELOPING COUNTRIES. THE DEVELOPED COUNTRIES SHOULD ENCOURAGE AND IMPROVE THE CONDITIONS FOR THE TRANSFER OF INFORMATION AND KNOW-HOW. THERE IS ALSO A NEED FOR TRANSFER OF TECHNOLOGY AMONG THE DEVELOPING COUNTRIES THEMSELVES.

58. In this context, the following considerations are pertinent:

(a) Results of research programmes may not be readily and immediately transformed into applicable technologies; a transitional phase of experiment and adaptation is often needed to evolve the required technologies;

(b) Imported technologies for the management of water resources may require - as an intermediate phase in the transfer of technology - further study and experiment concerning the suitability of their adaptation to available resources and prevalent socio-cultural, economic and environmental conditions.

(c) Water scarcity will often have a decisive influence on the development of appropriate technology. It may require in some cases a shift from traditional to relatively complex technologies;

(d) Self-reliance has become an objective in many developing countries. Efforts should be made to promote indigenous abilities and to develop appropriate technologies that use to the full local experience and resources. These efforts require institutional and financial support.

59. To this end it is recommended that countries should:

(a) Review the adequacy of existing institutional arrangements for the development of appropriate technologies in water resources management, and provide support for their development;

(b) Provide every possible encouragement and support to national institutions concerned with the development of appropriate technologies in water resources development;

(c) Provide the resources to enable professionals to observe what has been achieved in their field of expertise in other countries and to acquaint themselves with possible improvements in the technologies they are using at present;

(d) Encourage the widest possible diffusion of acquired knowledge on the development of appropriate technology; establish and expand enterprises and productively apply the appropriate technologies that have been developed;

(e) Review the extent of public participation in the planning, construction, operation and maintenance of water projects and take steps to ensure a greater level of participation, through consultations and the transfer of knowledge starting at the village level;

(f) Make the fullest use of labour in water projects, keeping in view the need to strike a suitable balance between labour-intensive and capital-intensive technologies, emphasizing the need to reduce unemployment and underemployment particularly for unskilled labour;

(g) Promote attempts to manufacture such items as pumps, engines, steel, polyvinyl chloride (PVC), asbestos cement and pre-stressed concrete pipes and water treatment reagents, from locally available resources. In the promoting of this idea the use of local materials with advanced technology should be encouraged. Appropriate precautions should be taken in the manufacture and use of potentially dangerous materials such as PVC and asbestos;

(h) Develop facilities for the servicing and maintenance of installed hydraulic equipment, including the manufacture of spare parts;

(i) Promote the standardization of equipment to help solve operational problems resulting from shortages of spare parts;

(j) Promote the standardization of specifications, design and plans of equipment and hydraulic work;

(k) Promote subregional and regional arrangements for the planning, design and construction of water projects and the exchange of information with other regions where similar conditions prevail;

(l) Promote intraregional technical co-operation to even out the prevalent disparities in technological development among countries while encouraging technological innovation in planning, instrumentation and equipment and the exchange of information with other regions;

(m) Ensure that water facilities to be manufactured from local resources do not create health hazards;

(n) Develop emergency programmes to supply water to areas affected by drinking-water shortage;

(o) Make all efforts to improve the cost-benefit ratio while taking into regard the requirements of environment and health protection and local and socio-economic aspects involved.

60. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Make a review of the adequacy of existing constitutional arrangements for the development of appropriate technology in the water resources field;

(ii) Support national efforts to manufacture construction materials, to service imported equipment, to manufacture spare parts and to manufacture the equipment itself;

(iii) Evolve standard designs and plans, wherever possible;

(iv) Strengthen subregional, regional and interregional arrangements for the planning, design and construction of water projects, through the provision of personnel and other such facilities;

(v) Provide funds to enhance the transfer of technologies and to adapt these technologies to local needs;

(vi) Support and strengthen institutions for the promotion of appropriate technology, at the village level, inter alia, by organizing workshops, seminars, and appropriate consultations.

61. It is further recommended to the Economic and Social Council that the relevant recommendations and resolutions of the United Nations Water Conference be transmitted to the Preparatory Committee for the United Nations Conference on Science and Technology for Development at its second session in order to ensure that water-management problems and the problems of appropriate water technologies be given priority attention in the preliminary national and regional analysis undertaken in the preparatory process for the Conference as well as by the Conference itself.

E. Natural hazards

62. There are extensive areas of the world where severe hydrometeorological phenomena frequently occur and cause great damage, leading to loss of life and setbacks in development. Experience shows that, with appropriate combinations of engineering works and non-structural measures, damages can be substantially reduced. It is necessary to plan ahead and co-ordinate the measures that need to be taken to avoid and reduce the damage produced by severe hydrometeorological phenomena. These should be studied and the losses in the most affected areas should be evaluated, taking into account their physical, economic and social characteristics, in order to forecast the likely nature and frequency of damage.

Flood loss management

63. Floods are major hazards for many countries because flood plains of large rivers are invariably densely populated and properties of considerable value are located on them. The flood losses can be decreased by comprehensive structural and non-structural precautions and by the organization of emergency services, including expanding the hydrological services to aid in forecasting floods and related events.

64. THERE IS A NEED IN MANY COUNTRIES TO STRENGTHEN PROGRAMMES TO REDUCE THE LOSSES ASSOCIATED WITH FLOODS WITHIN THE FRAMEWORK OF PROGRAMMES FOR LAND AND WATER MANAGEMENT AND FOR DISASTER PREVENTION AND PREPAREDNESS GENERALLY.

65. To this end it is recommended that countries should:

(a) As part of general land and water management programmes:

(i) Provide the maximum feasible scope for flood mitigation in reservoir design and operation, having regard, however, to the main function of the particular reservoir;

(ii) Take into consideration the effect of catchment use on the amount and timing of run-off;

(iii) Make provision for the zoning and management of flood-prone lands with due regard to the economic and social consequences of the different uses;

(iv) Plan well in advance and provide effective flood protection by structural and non-structural measures proportionate to the magnitude of the risk;

(v) Provide adequate financial resources to improve catchment areas for the retention of flood waters and soil erosion control and encourage local participation in the implementation of such measures;

(vi) Provide adequate funds for satisfactory maintenance of flood protection works;

(b) Develop flood forecasting and warning systems as well as flood-fighting and evacuation measures to minimize loss of lives and property in case of flooding. Disaster assistance which includes preventive health services should be included in developmental processes;

(c) Improve the collection of data on damage caused by floods so as to provide a better basis for the planning, design and management of measures for the mitigation of flood loss, and to evaluate the performance of measures taken;

(d) Develop flood-risk maps as a basis for public information programmes and action by Governments to regulate development in flood-prone areas;

(e) Give appropriate consideration to structural measures such as dikes and levees and also to non-structural measures like flood-plain regulations, flood zoning, the preparation of flood-risk maps, flood insurance, etc. and integrate measures for up-stream watershed management into over-all flood control plans.

Drought loss management

66. In the recent past droughts of exceptional severity have caused major hardships in many areas of the world. Such disasters can arise again at any time. In consequence, steps to mitigate the effects of drought in such areas is a top priority. In order to remedy the situation, structural and non-structural and emergency measures should be adopted and for this purpose the development and management of water resources as well as drought forecasting on a long-term basis should be viewed as a key element.

67. THERE IS A NEED TO DEVELOP IMPROVED BASES FOR PLANNING LAND AND WATER MANAGEMENT IN ORDER TO MAKE OPTIMUM USE OF LAND AND WATER RESOURCES IN AREAS SUBJECT TO SEVERE DROUGHT. COMPREHENSIVE PROGRAMMES SHOULD BE FORMULATED FOR THE PROGRESSIVE IMPLEMENTATION OF THE DEVELOPMENT OF WATER RESOURCES FOR THE BENEFIT OF DROUGHT-AFFECTED AREAS: SPECIFIC SHORT-TERM AND LONG-TERM OBJECTIVES, AS WELL AS TARGETS, SHOULD BE OUTLINED. THERE IS ALSO A NEED TO STUDY BASIC METEOROLOGICAL PROCESSES WITH A VIEW TO FORMULATING LONG-TERM FORECASTS IN WEATHER BEHAVIOUR IN ANY GIVEN AREA.

68. To this end, it is recommended that countries should:

(a) Undertake studies on climate, hydrometeorology and agronomy and on local management techniques in order to define the best means of extending and intensifying rain-fed cultivation while incurring a minimum of risk from scarcity of rain;

(b) Make an inventory of all available water resources, and formulate long-term plans for their development as an integral part of the development of other natural resources, and within this framework prepare medium-term and long-term plans for the development of these water resources. These activities may require co-ordination with similar activities in neighbouring countries;

(c) Consider the transfer of water from areas where surplus in water resources is available to areas subjected to droughts;

(d) Intensify the exploration of ground water through geophysical and hydrogeological investigations and undertake on a regional scale large-scale programmes for the development of wells and boreholes, to be explored in groups where appropriate for water for human and livestock consumption, taking into account the needs of pastures while preventing overgrazing and avoiding overexploitation of underground aquifers;

(e) Determine the effect of drought on aquifers and in the assessment of the response of ground-water systems to drought, basing such assessment on concepts such as storage/flow ratio in order to characterize ground-water flow regions in periods of drought;

(f) Arrange to complete as expeditiously as possible feasibility reports for well-defined surface water projects and for the implementation of projects deemed to be feasible;

(g) Make arrangements for the proper maintenance of existing wells and the development of new ones, using the resources and emergies of the affected population in rural areas on the basis of self-help, supplemented by State assistance and external resources;

(h) Undertake studies on technologies geared to the improvement of water pumps, efficiency of uses and the reduction of losses from evaporation, seepage, transpiration, etc;

(i) Develop drought-resistant plant species;

(j) Set up systems for the observation and control of the processes of desertification and carry out research on the basic causes of drought;

(k) Strengthen institutional arrangements, including co-operation among various agencies, for the preparation and dissemination of hydrological, hydrometeorological and agricultural forecasts and for the use of this information in the management of water resources and disaster relief;

(l) Wherever possible, institute a deliberate policy for the transfer of population from drought-prone areas to other suitable regions with the view of reducing harmful effects on the ecosystem and promoting long-term rehabilitation programmes;

(m) Evolve contingency plans to deal with emergency situations in drought-affected areas;

(n) Study the potential role of integration of surface and underground phases of water basins utilizing the stocks of water stored in ground-water formations in order to maintain a minimum supply under drought conditions.

Management of flood and drought loss

69. International organizations and other supporting bodies should, as appropriate, and on request:

(i) Further the development of hydrologic models as a basis for flood forecasting and river system management generally;

(ii) Study risk evaluation and other aspects of flood-plain zoning and management and disaster prevention;

(iii) Provide technical and other assistance in implementing flood control and flood protection works as well as the management of the catchment areas;

(iv) Arrange an initial programme of information exchange on drought loss management and long-term weather forecasting through expert meetings and subsequently take appropriate follow-up action.

F. Public information, education, training and research

Public information and extension service

70. In order to ensure maximum attention to the proper utilization, protection and conservation of water, it is of decisive importance that all citizens be made aware of fundamental matters relating to water. For that reason education and research have to be efficiently supplemtned by the provision of broad information to the public. Effective public information aims at the creating of a general as well as personal responsibility for the crucial water issues. It is considered an essential task for Governments to motivate the citizens to adopt a sound view on matters concerning their daily handling of water. Given a general feeling of responsibility for the local resources, people will be aware of the importance of the protection and conservation of water.

71. COUNTRIES SHOULD ACCORD PRIORITY TO CONDUCTING PROGRAMMES FOR NATIONAL INFORMATION CAMPAIGNS DIRECTED TO ALL PEOPLE CONCERNING THE PROPER UTILIZATION, PROTECTION AND CONSERVATION OF WATER.

72. In this context it is recommended that countries should:

(a) Direct information to all citizens, first of all through the normal channels offered by primary and adult education and in connexion with regular health programmes and information schemes for parents;

(b) Initiate special information campaigns conducted by the use of brochures, newspapers, radio and television, and other forms of popularization;

(c) Prepare people for the consequences of changed life patterns which could be the effect of improved water availability in areas where water shortage formerly restricted various activities;

(d) Provide information in a simple manner and adapted to local conditions concerning land-use, social traditions, climate, geology and infrastructure;

(e) Inform people of the negative ecological, hydrological and sanitary consequences of misuse of water;

(f) Emphasize the risk for the spreading of water-borne diseases in connexion with pollution of water;

(g) Carry out programmes for broad public information repeatedly and make a continuous review of the results.

Education and training

73. Many countries share problems in educating, training and retaining properly qualified and experienced personnel at all professional and subprofessional levels.

There is uncertainty as to the precise extent of these problems and an urgent need to isolate and remedy them. A number of national and subregional training establishments have been doing useful work in the training of middle-level subprofessionals, particularly in the subjects of hydrology, hydrogeology, water desalination and hydrometeorology. A number of fellowships offered by the United Nations system and other bilateral and multilateral agencies have been used for the training of professionals. Nevertheless, the total impact of all this effort has not been such as to remove the element of the shortage of trained manpower as a critical constraint.

74. COUNTRIES SHOULD ACCORD PRIORITY TO CONDUCTING SURVEYS TO DETERMINE NATIONAL NEEDS FOR ADMINISTRATIVE, SCIENTIFIC AND TECHNICAL MANPOWER IN THE WATER RESOURCES AREA. LAW-MAKERS AND THE PUBLIC IN GENERAL SHOULD BE INFORMED ABOUT AND SENSITIZED TO THIS PROBLEM.

75. TRAINING PROGRAMMES SHOULD BE IMPLEMENTED TO GIVE WATER MANAGEMENT PLANNERS AN UNDERSTANDING AND APPRECIATION OF THE VARIOUS DISCIPLINES INVOLVED IN WATER RESOURCES DEVELOPMENT AND UTILIZATION; TO PROVIDE PROFESSIONAL, TECHNICAL AND SKILLED MANPOWER IN HYDROLOGY, HYDROGEOLOGY, HYDRAULICS, SOCIAL, BIOLOGICAL AND HEALTH SCIENCES AND WATER DESALINATION; AND TO PROVIDE MANAGERS FOR WATER RESOURCES SYSTEMS, OPERATORS FOR WATER DISTRIBUTION AND FOR TREATMENT PLANTS AND MONITORS FOR WATER QUALITY INSTALLATIONS. EXTENSION SERVICES AT THE FARM LEVEL SHOULD ALSO BE ORGANIZED.

76. In this context, the following considerations are pertinent:

(a) Education and training are necessary for all levels of personnel dealing with water resources development, such as professionals, subprofessionals, water users, village level workers, etc.;

(b) Programmes should provide for refresher and in-service training for existing staff to disseminate new developments in methods and techniques;

(c) Incentives must be developed to induce staff to remain in work areas where the training they have received is relevant;

(d) Management training should be provided for senior staff on a variety of matters, including techniques of project negotiation and administration;

(e) Available training at both the professional and subprofessional levels often requires substantial qualitative rather than quantitative improvement as a first priority;

(f) Countries, in particular those offering fellowships of training for overseas students or acting as hosts to regional training centres, should be sensitive to the "brain drain" from developing countries and should co-operate in reducing its incidence;

(g) Regional educational and training centres for administrative and

subprofessional staff should be encouraged, but attention is drawn to the fact that suitable persons for subprofessional posts will often not possess a common regional language; smaller countries cannot afford to develop individual programmes and some economical means must be devised of sharing such programmes;

(h) A balance must be struck between the employment of international expertise and developing indigenous experience in planning and executing water development projects.

77. In this context it is recommended that countries should:

(a) Ensure that the contemplated manpower surveys cover all aspects of water resources management, including the appraisal of water resources, various water uses, water associated diseases and related methods such as computer technology, application of instruments, modelling and management techniques.

(b) Make a comprehensive assessment of the requirements of manpower in the professional and subprofessional, senior, junior and middle-level categories of personnel;

(c) Conceive manpower surveys for water development as integral components of over-all surveys of the need for trained manpower in all sectors of economic development in the nation, so as to provide really effective instruments for policy planning and project implementation;

(d) Improve the working and living conditions for national professional experts to facilitate and encourage them to teach and to develop research in their own countries;

(e) Make an inventory of cadres who emigrate abroad and create conditions that would encourage their return to their own countries.

78. Further, in connexion with training programmes, countries should:

(a) Take steps to strengthen and expand the facilities and existing institutions, universities, colleges, polytechnics and training centres by providing more teachers, teaching materials, etc., so that the quantity and quality of their output can be increased;

(b) Review the curricula of the existing institutions and training centres and expand them to include subjects pertaining to water resources development, the conservation of land and water resources, the teaching of basic anti-pollution measures for lessening pollution and other waterborne diseases in rural communities, the training of farmers in the practice of irrigated agriculture, and the training of technicians in community and industrial water supply and sanitation;

(c) Take steps to establish training programmes, on-site training and training centres for water and sewage-treatment plant operators and water distribution operators as well as training in other areas where a special need exists;

(d) Consider the establishment of special training schools attached to colleges and schools or to national water-development agencies on a permanent basis;

(e) Encourage intraregional co-operation to establish training institutions as joint ventures by interested countries in the training of professional and subprofessional personnal, inter alia, by the provision of teaching staff from water-development organizations within the region;

(f) Make provision for scholarships of long duration for graduate courses in subjects pertaining to water resources development as distinct from short-term fellowships included in specific projects;

(g) Make an inventory of regional institutions concerned with sanitary engineering and strengthen them by providing adequate personnel, funds and equipment;

(h) Consider the establishment of water resources development training centres on a subregional or regional basis to train specialists in various aspects of technology in the development of water resources at the post-graduate level for the benefit of graduates in engineering from existing universities or polytechnics, with provision for on-site training and refresher courses for engineers, including special courses in water resources management. In cases where these centres already exist they should be strengthened and no new ones should be established;

(i) Accord to scientists and engineers working in water resources development a status similar to professionals in other sectors of the national economies in order to ensure their retention;

(j) Establish, in co-operation with regional and international organizations, personnel exchange programmes to provide for experts and technicians from developing countries to serve in other countries which suffer from personnel shortages and to provide work experience for persons engaged in the operation of water management schemes at existing successful schemes in other countries, and to further encourage students engaged in graduate research to conduct their investigations in their own countries on topics appropriate to their countries' needs;

(k) Publish technical manuals and other guidance material in water-project design and construction, with particular relevance to local conditions;

(l) Ensure that university teachers and technical education institutions have enough practical experience and multidisciplinary training to improve their teaching and research;

(m) Take steps to encourage operational managers and supervisors to play their part, both individually and collectively, as non-professional and part-time trainers and instructors of their own subordinate staff.

79. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Conduct surveys on available manpower and needs in the field of water resource management and utilization;

(ii) Strengthen and expand the existing educational and training institutions at all levels including vocational training and improve the course content in subjects pertaining to the development of water resources;

(iii) Establish new training centres, as and when requested by countries;

(iv) Provide scholarships for undergraduate and graduate courses;

(v) Establish water resources development training centres in Africa for postgraduate specialization with special courses in the management of water resources and sanitary engineering;

(vi) Undertake regional studies in consultation with the countries concerned to identify the incidence of problems relating to the education and retention of staff. Thereafter, as appropriate, steps should be taken to formulate proposals to countries and to international agencies to meet identified needs. Countries are meanwhile urged to share their expertise and to offer appropriate training programmes as part of their own aid programmes.

Research needs

80. Properly planned research and its appropriate application play an important role in the resolution of water problems, and while the diversity of circumstances within the regions calls for specific programmes in most countries, there is also scope for the co-ordination of efforts. Considerable research is being carried out in research institutes, governmental and intergovernmental organizations and universities on problems related to the development of water resources. There is a need to review and evaluate the work carried out so far and to outline areas in which further research should be undertaken.

81. IT IS RECOMMENDED THAT COUNTRIES EVOLVE, WITHIN THE FRAMEWORK OF NATIONAL SCIENCE POLICIES, A PARTICULAR POLICY FOR RESEARCH WORK IN THE DEVELOPMENT, MANAGEMENT AND CONSERVATION OF WATER RESOURCES. HIGH PRIORITY SHOULD BE ACCORDED TO RESEARCH PROGRAMMES THAT PROVIDE THE KNOWLEDGE NECESSARY FOR THE SOUND MANAGEMENT OF WATER RESOURCES. SUITABLE INSTITUTIONAL FORMS SHOULD BE DEVELOPED TO PROMOTE CO-OPERATION BETWEEN WATER RESEARCH AND ADMINISTRATION AND TO ENSURE THAT RESEARCH ENDEAVOURS RESPOND FIRST TO PRIORITY PROBLEMS AS DESIGNATED IN NATIONAL PLANS FOR THE DEVELOPMENT OF WATER RESOURCES. RESEARCH ENDEAVOURS SHOULD FIRST RESPOND TO IMPORTANT PROBLEMS, BY ENSURING THAT DUPLICATION AND OVERLAPPING ARE MINIMIZED AND THAT RESULTS ARE DISSEMINATED IN FORMS THAT CAN BE READILY INTERPRETED AND APPLIED BY OTHER COUNTRIES. ENCOURAGEMENT SHOULD BE GIVEN TO REGIONAL CO-OPERATION IN HYDROMETEOROLOGICAL RESEARCH AND MONITORING AND TO RESEARCH PROMOTING GREATER EFFICIENCY IN WATER USE, PARTICULARLY IN AGRICULTURE AND INDUSTRY. THE RESULTS OF LONG- AND SHORT-TERM BASIC AND APPLIED RESEARCH SHOULD BE ADOPTED AND UTILIZED IN ORDER TO SOLVE SPECIFIC PROBLEMS AND THUS FORGE A CLOSER RELATIONSHIP BETWEEN RESEARCH AND DEVELOPMENT.

82. To this end it is recommended that countries should:

(a) Set up national steering committees comprising all relevant interested parties to make an inventory of problems in water resources development on which research has been, or is now being carried out, including research of subregional and regional organizations dealing with problems pertaining to water development;

(b) Co-ordinate research programmes at the national level by means of a systematic and scientific evaluation of the work carried out on those problems with a view to locating gaps in knowledge, avoiding overlap of research efforts and identifying areas in which further research is needed to advance the future development of water resources;

(c) Strengthen existing institutions, where gaps exist, and establish new ones, wherever necessary, for the specific purpose of conducting water resources research on problems closely related to developmental needs;

(d) Adopt and utilize the results of research to solve specific problems and thus forge a closer relationship between research and development;

(e) Make more use of existing institutional mechanisms and promote additional ones, where necessary, for continuous consultation and co-ordination among research workers in the field so that solutions will emerge to suit the water problems of the countries in particular regions;

(f) Promote research into problems of methodologies for the assessment of supplies of surface and ground-water resources, and for their use, development and management. Research organizations should use their resources first for applied research and application of research results already available to solve some of the most urgent national problems. As scientific personnel and equipment become available, more basic research may be undertaken and also research into high-technology fields;

(g) Promote research in areas related to their respective needs including where relevant:

Weather modification (should not be contrary to General Assembly resolutions 3475 (XXX) and 31/72)

Climatology and agroclimatology

Weather forecasting

Remote sensing

Possible effects of climatic change on water availability

Artificial recharge of aquifers

Soil-erosion and sediment control

Methods of increasing efficiency of water use in irrigation and rain-fed agriculture

Conservation of water in reservoirs and methods of operation of multipurpose reservoirs

Physical modelling

Application of systems analysis techniques for water resources, planning and management

Desalination, with particular reference to the treatment of brackish water

Recycling of water

Water and waste treatment

Water pollution and water quality modelling

Water-associated diseases and health effects of water schemes

Use of brackish water in agriculture

Contamination of ground waters

Crop water requirements

Salt-tolerant crops

Acquaculture

Methods of increasing efficiency of flood control and drought mitigation

Prevention and mitigation of the effects of natural hazards like earthquakes, hurricanes, volcanic eruptions on water resources

Use and control of water in humid areas, or areas of large amounts of rainfall;

(h) Encourage multidisciplinary research in co-ordination with training programmes within the fields of water assessment, utilization, protection, conservation and management;

(i) Encourage the participation of national research institutes and the scientific community in international programmes and institutions, and the exchange of relevant information with other countries.

83. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) Conduct a review and evaluation of the research work done so far with a view to outlining the directions of future research work needed;

(ii) Strengthen the existing research institutions and set up new ones, wherever needed, by offering technical assistance, funds, equipment and expertise;

(iii) Exchange information and experience and disseminate research results;

(iv) Prepare research projects, including global studies of environmental trends;

(v) Standardize methods of processing relevant data;

(vi) Investigate the possibilities of new technologies such as weather modification (in accordance with General Assembly resolutions 3475 (XXX) and 31/72), long-term weather forecasting, desalination and remote sensing to augment water availability.

G. Regional co-operation

Development of shared water resources 5/

84. In the case of shared water resources, co-operative action should be taken to generate appropriate data on which future management can be based and to devise appropriate institutions and understandings for co-ordinated development.

85. COUNTRIES SHARING WATER RESOURCES, WITH APPROPRIATE ASSISTANCE FROM INTERNATIONAL AGENCIES AND OTHER SUPPORTING BODIES, ON THE REQUEST OF THE COUNTRIES CONCERNED, SHOULD REVIEW EXISTING AND AVAILABLE TECHNIQUES FOR MANAGING SHARED WATER RESOURCES AND CO-OPERATE IN THE ESTABLISHMENT OF PROGRAMMES, MACHINERY AND INSTITUTIONS NECESSARY FOR THE CO-ORDINATED DEVELOPMENT OF SUCH RESOURCES. AREAS OF CO-OPERATION MAY WITH AGREEMENT OF THE PARTIES CONCERNED INCLUDE PLANNING, DEVELOPMENT, REGULATION, MANAGEMENT, ENVIRONMENTAL PROTECTION, USE AND CONSERVATION, FORECASTING, ETC. SUCH CO-OPERATION SHOULD BE A BASIC ELEMENT IN AN EFFORT TO OVERCOME MAJOR CONSTRAINTS SUCH AS THE LACK OF CAPITAL AND TRAINED MANPOWER AS WELL AS THE EXIGENCIES OF NATURAL RESOURCES DEVELOPMENT.

86. To this end it is recommended that countries sharing a water resource should:

(a) Sponsor studies, if necessary with the help of international agencies and other bodies as appropriate, to compare and analyse existing institutions for managing shared water resources and to report on their results;

(b) Establish joint committees, as appropriate with agreement of the parties concerned, so as to provide for co-operation in areas such as the collection, standardization and exchange of data, the management of shared water resources, the prevention and control of water pollution, the prevention of water-associated diseases, mitigation of drought, flood control, river improvement activities and flood warning systems;

(c) Encourage joint education and training schemes that provide economies of scale in the training of professional and subprofessional officers to be employed in the basin;

(d) Encourage exchanges between interested countries and meetings between representatives of existing international or interstate river commissions to share experiences. Representatives from countries which share resources but yet have no developed institutions to manage them could be included in such meetings;

(e) Strengthen if necessary existing governmental and intergovernmental institutions, in consultation with interested Governments, through the provision of equipment, funds and personnel;

5/ This term has been used only for the uniformity of the text and its use does not prejudice the position of the countries supporting the terms "transboundary waters" or "international waters" in any of the problems involved.

(f) Institute action for undertaking surveys of shared water resources and monitoring their quality;

(g) In the absence of an agreement on the manner in which shared water resources should be utilized, countries which share these resources should exchange relevant information on which their future management can be based in order to avoid foreseeable damages;

(h) Assist in the active co-operation of interested countries in controlling water pollution in shared water resources. This co-operation could be established through bilateral, subregional or regional conventions or by other means agreed upon by the interested countries sharing the resources.

87. The regional water organizations, taking into account existing and proposed studies as well as the hydrological, political, economic and geographical distinctiveness of shared water resources of various drainage basins, should seek ways of increasing their capabilities of promoting co-operation in the field of shared water resources and, for this purpose, draw upon the experience of other regional water organizations.

Recommendations for particular regions

88. The Conference took note of all the specific regional recommendations emanating from the regional commissions in Africa, Asia and the Pacific, Europe, Latin America and Western Asia and referred them to the regional commissions concerned for appropriate action in the light of the other relevant recommendations approved by the Conference. These recommendations are reproduced in the annex to this section of the present chapter.

89. The Conference also took note of the valuable contributions provided by the regional commissions. These formed part of the material on which the consolidated action recommendations (E/CONF.70/9) had been based.

H. International co-operation

Development of shared water resources 5/

90. It is necessary for States to co-operate in the case of shared water resources in recognition of the growing economic, environmental and physical interdepencies across international frontiers. Such co-operation, in accordance with the Charter of the United Nations and principles of international law, must be exercised on the basis of the equality, sovereignty and territorial integrity of all States, and taking due account of the principle expressed, inter alia, in principle 21 of the Declaration of the United Nations Conference on the Human Environment. 6/

91. IN RELATION TO THE USE, MANAGEMENT AND DEVELOPMENT OF SHARED WATER RESOURCES, NATIONAL POLICIES SHOULD TAKE INTO CONSIDERATION THE RIGHT OF EACH STATE SHARING THE RESOURCES TO EQUITABLY UTILIZE SUCH RESOURCES AS THE MEANS TO PROMOTE BONDS OF SOLIDARITY AND CO-OPERATION.

92. A CONCERTED AND SUSTAINED EFFORT IS REQUIRED TO STRENGTHEN INTERNATIONAL WATER LAW AS A MEANS OF PLACING CO-OPERATION AMONG STATES ON A FIRMER BASIS. THE NEED FOR PROGRESSIVE DEVELOPMENT AND CODIFICATION OF THE RULES OF INTERNATIONAL LAW REGULATING THE DEVELOPMENT AND USE OF SHARED WATER RESOURCES HAS BEEN THE GROWING CONCERN OF MANY GOVERNMENTS.

93. To this end it is recommended that:

(a) The work of the International Law Commission in its contribution to the progressive development of international law and its codification in respect of the law of the non-navigational uses of international watercourses should be given a higher priority in the working programme of the Commission and be co-ordinated with activities of other international bodies dealing with the development of international law of waters with a view to the early conclusion of an international convention;

(b) In the absence of bilateral or multilateral agreements, Member States continue to apply generally accepted principles of international law in the use, development and management of shared water resources;

(c) The Intergovernmental Working Group of Experts on Natural Resources Shared by Two or More States of the United Nations Environment Programme be urged to expedite its work on draft principles of conduct in the field of the environment for the guidance of States in the conservation and harmonious exploitation of natural resources shared by two or more States;

(d) Member States take note of the recommendations of the Panel of Experts on Legal and Institutional Aspects of International Water Resources Development

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6/ Report of the United Nations Conference on the Human Environment (United Nations publication, Sales No.: E.73.II.A.14), chap. I, sect. II.

set up under Economic and Social Council resolution 1033 (XXXVII) of 14 August 1964 as well as the recommendations of the United Nations Interregional Seminar on River Basin and Inter-basin Development (Budapest, 1975).

(e) Member States also take note of the useful work of non-governmental and other expert bodies on international water law;

(f) Representatives of existing international commissions on shared water resources be urged to meet as soon as possible with a view to sharing and disseminating the results of their experience and to encourage institutional and legal approaches to this question;

(g) The United Nations system should be fully utilized in reviewing, collecting, disseminating and facilitating exchange of information and experiences on this question. The system should accordingly be organized to provide concerted and meaningful assistance to States and basin commissions requesting such assistance.

Financing arrangements for water development

94. A persistent and recurring problem in many countries is the mobilization and the obtaining of adequate financial resources to implement necessary improvements in the numerous aspects of water resources planning, development and management.

95. A BETTER AND INCREASED FLOW OF FUNDS ON THE BEST POSSIBLE TERMS CAN ASSIST IN ACHIEVING THE GOALS ASSOCIATED WITH WATER RESOURCES PLANNING, DEVELOPMENT AND MANAGEMENT. ARRANGEMENTS SHOULD BE MADE TO PROVIDE ADEQUATE AND TIMELY FINANCING FOR PROJECT PLANNING, FORMULATION AND IMPLEMENTATION ON A SUSTAINED AND LONG-TERM BASIS ON EASY AND LIBERAL TERMS.

96. STATES WHICH COMMAND SURPLUS FINANCIAL RESOURCES MAY ESTABLISH JOINT OR INTERGOVERNMENTAL VENTURES AS THEIR CONSTITUTIONAL REGIMES PERMIT IN THE FIELD OF WATER MANAGEMENT AND DEVELOPMENT WITH DEVELOPING COUNTRIES. THIS MAY BE DONE VOLUNTARILY ON A COUNTRY-BY-COUNTRY BASIS BUT SHOULD PREFERABLY BE HANDLED ON A COMBINED REGIONAL BASIS.

97. To this end, it is recommended that countries should:

(a) Examine the various possibilities of mobilizing internal resources;

(b) Develop by 1980 an inventory of investment needs in the field of water resources and determine the relative priorities of these needs;

(c) Investigate the possibilities of making water projects, as far as possible, self-sustaining;

(d) Attempt to reduce project costs by greater involvement of the people, more extensive use of local labour, material and technology, more economic designs and the preparation and adoption of standard designs for structures, establishment of joint ventures for manufacturing pumps, gates, pipes, valves, etc., and formation of national consultancy firms, etc.;

(e) Improve the economic viability and the social effectiveness of projects by making them more efficient;

(f) Support where appropriate the work of non-governmental organizations engaged in the promotion of water management projects, particularly those which are low-cost and self-help based.

98. International agencies and other supporting bodies, particularly international financing agencies such as the World Bank, regional and subregional development banks, national development banks and other bilateral and multilateral agencies for development financing, should, where appropriate and within their respective areas of responsibility:

(i) Co-ordinate their policies and activities in the matter of financing projects and plans for water resources development;

(ii) Review their financing criteria and give sufficient weight to the socio-economic effects of the projects, including direct, indirect and social benefits;

(iii) Adopt flexible methods of project execution in order to encourage effective participation of national capacities and to promote regional co-operation;

(iv) Enunciate well-thought-out, comprehensive and realistic policies for financial assistance, which will pave the way for the formulation of long-term programmes for the implementation of water projects;

(v) Strengthen existing institutional arrangements at the subregional and regional levels through the provision of equipment, personnel and funds;

(vi) Undertake such co-operative studies or joint action for the development of international river and lake basins as may be requested by basin countries;

(vii) To the extent possible, provide appropriate opportunities for tenders to be offered on an international basis for goods and services, entrusting the recipient countries with the responsibility of executing projects financed by these agencies provided cost-effectiveness is achieved;

(viii) To the extent possible, agree to the retention of local consulting firms capable of undertaking entire projects or project elements, channel foreign expertise into such firms while advising on specific aspects of the project at the request of the Governments concerned.

Technical co-operation among developing countries

99. The promotion of technical co-operation among developing countries will supplement, upgrade and give a new dimension to the traditional forms of bilateral

and multilateral development co-operation to help the developing countries achieve greater intrinsic self-reliance. The development of water resources in developing countries provides a promising area where technical co-operation among developing countries can be achieved. Many developing countries have expertise and capacity which they can share with other developing countries. Alternate appropriate technologies have been developed and many developing countries have reached the stage of self-reliance in water-resource development to enable them to apply the more appropriate techniques using the latest know-how and promote better understanding among the countries concerned. This can be adapted to the needs of other developing countries by means of technical co-operation among developing countries.

100. GOVERNMENTS OF DEVELOPING COUNTRIES SHOULD PURSUE, EXPLORE AND BUILD MECHANISMS IN ORDER TO PROMOTE TO THE FULLEST EXTENT, TECHNICAL CO-OPERATION AMONG THEMSELVES WITH A VIEW TO ACHIEVING COLLECTIVE SELF-RELIANCE IN THE DEVELOPMENT OF THEIR WATER RESOURCES.

101. TECHNICAL CO-OPERATION AMONG DEVELOPING COUNTRIES WILL ALSO FACILITATE THE SELECTION OF APPROPRIATE TECHNOLOGIES FOR EACH COUNTRY AND REGION ACCORDING TO LOCAL SOCIO-ECONOMIC AND PHYSICAL CONDITIONS.

102. In the light of these considerations it is recommended that where appropriate countries should at the national, regional and subregional level:

(a) Develop an adequate information base so that the capabilities and requirements for technical co-operation in water resources development are known, and put to good use on a continuing basis;

(b) Co-operate in the preparation and upgrading of a register of experts and consultant services on a subregional/regional basis having particular knowledge of the problems confronting the development of water resources for that subregion/region, and who can be called upon as and where required by member Governments;

(c) Determine priority areas in water resources development, and identify institutes having facilities, capabilities and expertise in these areas to develop technologies appropriate for developing countries;

(d) Develop pilot projects for the region/subregion by mutual agreement among the countries concerned to comprise a group of engineers and experts in the field of water resources from the region/subregion who would travel from country to country to collect detailed information on the available resources and the need for mutual exchange of technical resources in the region to promote technical co-operation among developing countries in the water sector;

(e) Identify programmes for water resources development that can be achieved through technical co-operation among developing countries in specific sectors such as community water supply, irrigation, drainage, hydroelectric generation, the development and management of transboundary water resources, ground-water development, and means for the prevention and reduction of losses due to floods and

droughts and pollution control, water legislation and training, transfer of technology suited to the requirements of the developing countries and the general development of such technology;

(f) The countries of the regions of Africa, Asia and Latin America are especially urged to study the possibility of research development and production of low-cost equipment and technology so as to achieve the objectives of a better and more comprehensive assessment of their water resources within the shortest possible time and at the least cost and to promote the exchange of information at the regional level.

103. International organizations and other supporting bodies should, as appropriate, and on request, take the following action:

(i) The Administrator of the United Nations Development Programme (UNDP) in close consultation with the whole United Nations system, should make a study on the feasibility of establishing an information referral system on the capacities available in the developing countries for technical co-operation with each other by means of the utilization of key water resources institutions in the developing countries. This system should form an integral part of the UNDP information referral system. It should be based on information supplied by Governments and by the United Nations system from institutions within each sector and should be managed by UNDP on behalf of the United Nations system as a whole;

(ii) Assistance should be given in the initiation and implementation of joint programmes and institutions for research and training in water-related activities on a regional or subregional basis, as well as for financing of pilot projects and field studies as and where appropriate;

(iii) Consideration should be given in the preparatory process for the United Nations Conference on Technical Co-operation among Developing Countries to the provision of assistance, as necessary, to appropriate institutions concerned with water management to allow them to attend the Conference.

Annex

SPECIFIC REGIONAL RECOMMENDATIONS

Africa: institutional problems

1. Institutional inadequacy has been one of the major constraints on the effective development of water resources in the past: increasing attention has been paid to this problem during the last decade and a number of measures have been taken to strengthen existing institutions, to create new ones where needed and to provide for co-ordination; however, much remains to be done by way of streamlining the organizations and providing effective mechanisms for implementation and co-ordination at the national, subregional and regional levels.

2. THE PROBLEM OF CREATING AN ADEQUATE INSTITUTIONAL INFRASTRUCTURE SHOULD BE KEPT CONSTANTLY UNDER REVIEW AT THE NATIONAL, SUBREGIONAL AND REGIONAL LEVELS, IN ORDER TO STREAMLINE THE EXISTING ORGANIZATIONS AND CREATE NEW ONES, WHERE NECESSARY, IN ORDER TO DEAL EFFECTIVELY WITH THE PROBLEMS OF WATER DEVELOPMENT AS THEY EMERGE FROM TIME TO TIME.

3. To this end it is recommended that countries should:

(a) Consider strengthening existing subregional organizations according to their individual needs, in consultation with the organizations concerned;

(b) Consider the creation of regional teams of experts/consultants under either the Economic Commission for Africa or any other suitable African development agency; such teams should carry out similar tasks in adjacent African countries for ground-water assessment, studies on water demand, reconnaissance of dam sites, etc., so as to enable the countries to work together over an extended period of time under similar technical conditions;

(c) Encourage the formation of technical associations open to all who possess the necessary professional credentials to be organized regionally with annual all-African conferences focusing on specific problem areas and solutions;

(d) Consider the establishment of scientific institutes within the common river basins to promote scientific studies, to formulate basin-wide plans for integrated basin development and to promote manpower training and an institutional framework within the basin States so as to reduce progressively the dependence on foreign consultancy enterprises;

(e) Consider expanding the scope of various specifically African agencies, such as the Organization of African Unity or the Economic Commission for Africa, so as to encourage participation in water resources development programmes to a much greater extent than hitherto; such regional organizations are potentially the most effective for co-ordination at the regional level, and for the evaluation

of the progress of projects and their implementation at specified intervals of time - such as every three to five years;

(f) Strengthen the secretariat of the Economic Commission for Africa in its water resources activities so as to assist in co-ordinating the activities of the United Nations bodies at the regional level and to follow up the recommendations for Africa in the field of water resources.

4. In connexion with the establishment of institutions to deal with drought management, the Economic Commission for Africa has recommended further that drought-affected or drought-prone countries should draw up programmes similar to those of the Permanent Inter-State Committee on Drought Control in the Sahel, and implement them as early as possible so as to mitigate human suffering and free African agriculture from its present almost total subjection to the vagaries of rain.

Europe

5. In the case of transboundary river basins, and other shared waters, the active co-operation of riparian countries should be promoted, in particular in water pollution control. a/ This international co-operation could usefully be established, inter alia, through regional conventions and the harmonization of different long-term national plans of riparian countries, and at a second stage, if necessary, take steps to develop a joint plan for the entire basin.

6. Co-operation at the regional and international levels should be developed along the following guidelines:

(i) Exchange of scientific and technical information and documentation;

(ii) Review and analysis of the existing situation and prospects concerning the use of water resources, including:

Improving forecasting methods of hydrological régimes and exchanging forecasts on a regional scale

Research into water resources in transboundary river and sea basins to estimate the effects of human activity factors on water régimes and quality

Intensification of research and development applied to water management, including the design and demonstration of new systems and instruments for measuring and monitoring water quality and quantity (remote sensing) as well as low cost, easily maintained and reliable technologies for use by all nations, and research on emerging technologies for non-conventional sources

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a/ In the ECE region this co-operation is carried out in the spirit of the Final Act of the Conference on Security and Co-operation in Europe.

Intensification of national and international efforts designed to maximize the economic and social efficiency of all water inputs, including measures to heighten awareness, change attitudes and provide the technological means and incentives to conserve and protect available water.

Latin America

7. The work that the United Nations, its specialized agencies and other international bodies operating in the region have carried out or are carrying out has effectively contributed to the exploitation of water resources.

8. IT IS DESIRABLE THAT THE WORK OF THE UNITED NATIONS IN THE REGION SHOULD BE CONTINUED, STRENGTHENED, CO-ORDINATED WITH AND COMPLEMENTED BY THE ACTIVITIES OF OTHER INTERNATIONAL BODIES.

9. In particular it is recommended that:

(a) Co-ordination at the regional level among the bodies of the United Nations system, and co-ordination between them and the other international organizations operating in Latin America and the Caribbean should be strengthened;

(b) The Economic Commission for Latin America should continue its work on studies of the optimum and integrated use of water with appropriate and timely participation by professionals and technical experts from the countries involved; it should include in its programme projects dealing with the interaction between water and the other environmental components; and it should co-operate with national and international bodies in the training of human resources;

(c) The studies on water in relation to the environment begun by the United Nations Environment Programme, the Economic Commission for Latin America, and the United Nations Educational, Scientific and Cultural Organization should be continued and enlarged, and further topics of interest should be included among those specifically studied;

(d) The work carried out on similar subjects by the International Law Commission should also be continued and expanded;

(e) The Pan-American Sanitary Bureau and the World Health Organization should continue and strengthen their technical co-operation activities in the field of the supply of drinking water, waste-water disposal, and water quality generally;

(f) The Joint Inter-American Development Bank/Pan-American Sanitary Bureau project for the supply of water to small communities should be continued and strengthened;

(g) The Food and Agriculture Organization of the United Nations should attach special importance to the execution of drainage works in agricultural land;

(h) The Centre for Natural Resources, Energy and Transport, in collaboration with the Economic Commission for Latin America, should carry out a study of river transport systems, taking into account the interests of the countries which share navigable international waters;

(i) International agencies such as the Inter-American Development Bank and the World Bank should increase financing both for basic studies and for plans, feasibility studies, projects and the construction of necessary works for the exploitation of water resources, in view of the social benefits involved in such activities;

(j) Support should be given to the work of the Comité Regional de Recursos Hidráulicos del Istmo Centroamericano so that it can continue its activities on a permanent basis with an executive secretariat, and the United Nations bodies, especially the World Meteorological Organization and the Economic Commission for Latin American, can collaborate with the projects which that Committee may establish;

(k) Regional central American programmes for sanitary engineering and hydraulic resources in the Regional School for Sanitary Engineering in Guatemala City and the Chair of meteorology in Costa Rica should be strengthened and organizations of the United Nations should collaborate in their task through programmes of technical assistance, exchange with other similar regional centres and the granting of fellowships;

(l) An inventory should be made of the human resources in the countries of the region, while training in research and the development of water resources and exchange of personnel should be promoted in order to allow first-hand exposure to differing technologies and procedures;

(m) The Organization of American States should continue its technological efforts to help with the implementation of projects for the exploitation of water resources, in respect of which it provides regional technical co-operation, when so requested by the countries concerned;

(n) The Latin American Economic System (SELA) should be urged to give priority to its co-operation programmes for regional and subregional projects for the exploitation of water resources;

(o) The United Nations, availing itself of the experience of the Centro Interamericano de Desarrollo Integral de Agua y Tierra (CIDIAT), the Instituto Nacional de Ciencia y Técnica Hídricas (INCYTH) and other existing bodies specializing in the subject, to carry out research and the training of professional, subprofessional, technical and management staff in the various aspects of science and technology related to the development of water resources;

(p) Support should be given to the work being conducted by the institutional system of the River Plate Basin so that its activities may be continued and intensified with a view to attaining the objectives embodied in the River Plate Basin Treaty;

(q) The facilities of the programmes of the World Meteorological Organization, particularly the World Weather Watch, should be utilized with the view to supporting a better understanding of hydrometeorological phenomena in the region;

(r) Through appropriate action by the World Health Organization, the positive experience gained by the Centro Panamericano de Ingeniería Sanitaria y Ciencias del Ambiente (CEPIS) should be strengthened, increased and extended so that, through the establishment of similar centres, the developing countries of other geographical regions may enjoy similar benefits.

Western Asia

10. Because of the extreme importance of water resources for the future of the region it is imperative that measures be taken now to conserve and develop this vital resource in the most efficient and economic manner for the highest and best use of all nations.

11. IT IS RECOMMENDED THAT THERE BE FORMED A WATER RESOURCES COUNCIL FOR WESTERN ASIA (HEREINAFTER REFERRED TO AS THE COUNCIL), COMPOSED OF ONE REPRESENTATIVE FROM EACH OF THE FOLLOWING TWELVE STATES: BAHRAIN, DEMOCRATIC YEMEN, IRAQ, JORDAN, KUWAIT, LEBANON, OMAN, QATAR, SAUDI ARABIA, SYRIAN ARAB REPUBLIC, UNITED ARAB EMIRATES AND YEMEN; THAT EACH REPRESENTATIVE ON THE COUNCIL BE QUALIFIED TO SPEAK FOR HIS COUNTRY ON WATER-RELATED MATTERS; THAT SUCH REPRESENTATIVES BE NAMED AS SOON AS POSSIBLE IN ORDER THAT AN INITIAL MEETING BE HELD SOON THEREAFTER; THAT IN ORDER TO IMPLEMENT THE PROGRAMME OF THE COUNCIL CERTAIN COMMITTEES, TASK FORCES AND BOARDS, AS NOTED BELOW, FOR EXAMPLE, MAY NEED TO BE ESTABLISHED ON A PERMANENT OR TEMPORARY BASIS; THAT SUCH COMMITTEES, TASK FORCES AND BOARDS MAINTAIN FULL CO-ORDINATION WITH UNITED NATIONS AGENCIES AND GOVERNMENTAL AND PRIVATE AGENCIES NOW WORKING IN WATER PROGRAMMES; THAT TASK FORCES BE PHASED OUT AFTER COMPLETION OF THEIR MISSION; THAT TASK FORCES, BOARDS AND COMMITTEES BE ESTABLISHED INITIALLY FOR THE FOLLOWING AREAS, WITH OTHERS TO BE FORMED AS NEEDED:

Board for a water resources fund

12. This Board would be set up for the purpose of establishing a new fund or establishing access to existing funds to be used in the form of loans or grants to the States members of the Economic Commission for Western Asia, at the national, subregional and regional levels in water-related programmes. The Board could establish an appropriate organizational structure to handle such funds. It could also be the responsibility of the Board, with the approval of the Council, to disburse aid or to assist countries in securing funds for use in efficient and worth-while water-related programmes. Such programmes could include, but need not be limited to, the broad categories of education, manpower training, research, consultant services, implementation of data-collection systems, development and management of water resources and economic analyses of water priorities. Specialists may be employed to determine eligibilities of need for assistance from the fund. Upon acceptance of this concept and formation of the Board detailed procedures would be developed.

Task force for the establishment of the water resources technical training centre

13. This task force could establish as soon as possible a training centre (with location to be determined by the task force and approved by the Council) for the training of technical personnel urgently needed in the field of water resources. The initial size of the training centre could allow for a minimum of 10-15 representatives from each country, the length of the training period to be determined after detailed analysis. Training at the subprofessional and technical levels could be given in many areas related to water resources, including but not limited to the following:

(a) Training in proper techniques for installing data networks and the evaluation and assessment of such data; the networks would include climatological stations, stream-gauging stations, ground-water observations, etc.;

(b) Fundamentals and principles of hydrology and hydrogeology at the subprofessional level;

(c) The operation and maintenance of water systems, including desalination plants, municipal and rural drinking-water systems, and water-treatment plants; training in laboratory analysis and testing for chemical and biological materials would also be included;

(d) The training of well-drilling crews in proper techniques for the drilling and development of well production, which would include electric logging and material analysis and the proper selection of pumps, well screens and other pertinent items.

Task force on data collection networks

14. This task force could be responsible for determining the components of and for implementing an adequate data-collection network for each country desiring assistance. Specialists trained in this field could be sent to any country desiring assistance to analyse and assess the situation, recommend components for the system and recommend necessary action to see that the programme is carried out.

Committee for professional assistance

15. This committee could see that teams of consultants or specialists of professional stature are made available to any nation requesting assistance in water-related matters. Such matters could include, but need not be limited to, assistance in developing national water policy, long-range planning, water legislation, rules and regulations for water use, studies and recommendations on governmental infrastructure related to water resources, economic evaluation of priority of water use, assistance in assessing the magnitude and quality of surface-water and ground-water resources, water management techniques and other areas as deemed appropriate. Such teams would be paid for by the country requesting assistance or by the Fund, as considered appropriate.

Committee for applied research

16. This committee could examine research facilities at present available for water-related matters and could recommend the establishment of any other facilities deemed necessary to cover fully the needs of all 12 nations on the Council. The committee could also establish a centre for compiling and disseminating research findings, both regional and international, to each of the 12 countries comprising the Council. Research findings and scientific articles could be published in technical periodicals and professional journals to give prestige to the research programmes of the area. The committee could also establish and maintain a reference library for use by the States members of the Council and could establish and operate a data bank, including data on water resources data for the members of the Council. The committee could investigate the need for a data bank on trained manpower.

Committee on subregional streams and underground aquifers

17. This committee could assist in initiating studies related to streams, wadis or underground aquifers common to two or more States members of the Council. This committee would co-operate with existing committees and groups in the gathering and analysis of basic data and the development of guidelines and compacts governing the use of such resources.

Committee for environmental and health aspects of water resource development

18. The committee is not intended to duplicate existing programmes in health-related fields but would ensure that water-resource development is in harmony with environmental and health factors. Close co-operation could be maintained with health organizations. Consultants or specialists could be employed as required to examine projects proposed for implementation in order to assess and evaluate the effects, both beneficial and adverse, of such proposed programmes on the environment and health of the country concerned. Special attention could be given to the effects upon coastal and marine water from upstream development. This committee should investigate the desirability of requiring environmental impact studies for all water-resource projects.

Committee on higher education at the professional level in water-related fields

19. This committee would examine the facilities and curricula of existing higher educational institutions in Western Asia with a view to determining the adequacy of present quality and the coverage of courses relating to water resources and environmental fields at professional levels. Where deficiencies are noted, action could be taken to bring such schooling up to adequate and acceptable levels. It would not be expected that each country would provide such training, but somewhere in the region there should be sufficient institutional facilities to fill the needs of the region. This programme could be co-ordinated with existing educational and scholarship programmes within the region.

RESOLUTIONS

I. Assessment of water resources

The United Nations Water Conference,

Recognizing that for the plans of action adopted by the Conference for the intensification and improvement of water use and development in agriculture and for providing safe drinking water and sanitation for all human settlements by 1990, a proper assessment is necessary of water resources in all countries of the world, and in particular in developing countries,

Considering that this assessment can be achieved only if all countries strengthen and co-ordinate arrangements for the collection of data in accordance with the recommendations of the Conference,

Resolves that:

(a) All efforts should be undertaken at the national level to increase substantially financial resources for activities related to water-resources assessment and to strengthen related institutions and operational services as necessary and appropriate at the national and regional levels;

(b) Training programmes and facilities for meteorologists, hydrologists and hydrogeologists should be established or strengthened;

(c) National scientific infrastructure for water-assessment activities be strengthened or established, particularly in developing countries;

(d) International co-operation aimed at the strengthening of water-resources assessment, particularly within the International Hydrological Programme and Operational Hydrological Programme be keyed to the targets set by the United Nations Water Conference and appropriately supported by national and international governmental and non-governmental institutions.

II. Community water supply

The United Nations Water Conference,

In view of the course taken by the discussions and the aspirations of the countries represented at the United Nations Water Conference and in view also of what was proposed at Habitat: United Nations Conference on Human Settlements, and

Considering that:

(a) All peoples, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs;

(b) It is universally recognized that the availability to man of that resource is essential both for life and his full development, both as an individual and as an integral part of society;

(c) To a significant extent similar considerations apply to all that concerns the disposal of waste water, including sewage, industrial and agricultural wastes and other harmful sources, which are the main task of the public sanitation systems of each country;

(d) The fundamental challenge facing all mankind can be met only with full international co-operation in all its aspects, entailing the mobilization of physical, economic and human resources;

(e) It is imperative to facilitate ways of achieving this essential co-operation, so that water is attainable and is justly and equitably distributed among the people within the respective countries;

(f) Those countries which are in a position to provide assistance, as well as international or regional organizations, should undertake to do so until the objective is attained, seeking to simplify regulations and administrative arrangements;

(g) Organizations of the United Nations system and other international organizations are making progress towards possible establishment of a consultative group mechanism on community water programmes.

Recommends:

(a) That where human needs have not yet been satisfied, national development policies and plans should give priority to the supplying of drinking water for the entire population and to the final disposal of waste water; and should also actively involve, encourage and support efforts being undertaken by local voluntary organizations;

(b) That Governments reaffirm their commitment made at Habitat to "adopt programmes with realistic standards for quality and quantity to provide water for urban and rural areas by 1990, if possible";

(c) That with a view to achieving these ends, the nations which need to develop their systems for providing drinking water and sanitation should prepare for 1980 programmes and plans to provide coverage for populations and to expand and maintain existing systems; institutional development and human resources utilization; and identification of the resources which are found to be necessary;

(d) That the United Nations agencies should co-ordinate their work efforts to help Member States, when they so request, in the work of preparation referred to in subparagraph (c) above;

(e) That in 1980 the national programmes which have been implemented for that purpose, and the extent to which the countries concerned have succeeded in

mobilizing local and national support should be reviewed by an appropriate mechanism to be determined by the Economic and Social Council and based on the use of existing machinery, with a view to attaining co-ordinated action toward agreed targets;

(f) That in accordance with the decisions of the existing structures of the Economic and Social Council, appropriate external assistance should be available in order to assist in building, operating and maintaining these systems;

(g) That the Plan of Action formulated below should be implemented in a co-ordinated manner at the national and international levels.

PLAN OF ACTION

In order to be able to reach the targets of Habitat recommendation C.12, drastic measures have to be taken. This will need firm commitment on the part of countries and the international community.

A. Priority areas for action

1. Action must focus on promoting (a) increased awareness of the problem; (b) commitment of national Governments to provide all people with water of safe quality and adequate quantity and basic sanitary facilities by 1990, according priority to the poor and less privileged and to water scarce areas; and (c) larger allocation to this sector from the total resources available for general economic and social development.

2. Action must be taken to remedy constraints of manpower shortage (especially at the intermediate and lower levels), inadequacies in institutions and organization, and lack of appropriate and cost-effective technology.

3. New approaches should be developed which will result in larger flows of national, international and bilateral funds on more favourable and flexible conditions, so as to enable countries to increase the speed of implementation and, more important, enable the more effective use of the additional resources.

4. Communities must be provided with effective education on domestic hygiene and must be motivated and involved as appropriate at every level of the programme, including the planning, construction, operation, maintenance and financing of services, and the monitoring and safeguarding of the quality of the water supplied.

B. Recommendations for action at national level

5. Each country should establish goals for 1990 which match as far as possible the global targets adopted. In order to attain these goals, each country should:

(a) Develop national plans and programmes for community water supply and sanitation, and identify intermediate milestones within the context of the

socio-economic development plan periods and objectives, giving priority attention to the segments of the population in greatest need;

(b) Immediately initiate engineering and feasibility studies on projects that are considered to be of the highest priority, and are based on a cost-effective technology appropriate to local conditions, with community participation, good management, and provision for operation and maintenance;

(c) Assess the manpower situation and, on the basis of this assessment, establish training programmes at the national level, to meet the immediate and future needs for additional professional staff, intermediate level technicians and, most important, village technicians;

(d) Promote massive national campaigns to mobilize public opinion regarding the provision of basic sanitary services, and develop appropriate procedures to ensure the active participation of communities in the programme;

(e) Establish appropriate institutions, if these do not exist, and assign to them specific responsibilities for the planning, implementation and monitoring of progress of the programme;

(f) Co-ordinate the efforts of all sectors active in rural areas, utilizing the manpower and other resources available, to ensure the provision of technically and socially acceptable sanitary facilities in rural areas;

(g) Develop a national revolving fund, in the first instance financed from substantially increased loans and grants from national and foreign sources, for water supply and sanitation which will encourage both the mobilization of resources for this sector and the equitable participation of beneficiaries; discourage wasteful consumption; and include a flexible combination of rates and, where necessary, explicit subsidies or other measures designed to achieve the economic and social objectives of the programme.

C. Recommendations for action through international co-operation

6. To achieve the Habitat targets, the international community must adopt new approaches to support increased national commitments with particular reference to the least developed and most seriously affected countries. It is, therefore, recommended that:

(a) Financial contributions be increased to strengthen the capabilities of international and bilateral agencies co-operating with Governments in the extension of community water supply and sanitation;

(b) At the request of national Governments, co-operation be extended to the formulation and implementation of high priority projects and programmes for community water supply and sanitation, with analysis of goals, methods and resources;

(c) Collaboration with the ongoing activity of the World Health Organization for monitoring and reporting on the status and progress of community water supply and sanitation be intensified.

7. The international community should give high priority to collaborating with Governments with regard to manpower surveys, the establishment of national training programmes (to meet immediate and future needs for professional staff, intermediate level technicians, and village technicians), research, and the promotion of community participation.

8. There should be even greater emphasis on social benefits. Multilateral and bilateral financing institutions should recognize the need for a higher level of grants and low interest-bearing loans to community water supply and sanitation programmes and, where this practice is already accepted, increase the proportion of such loans. They should be prepared to shoulder a higher proportion of local costs when financing community water supply and sanitation, increase their total allocations especially to rural water supply and sanitation, and complement local efforts in the rehabilitation and maintenance of systems.

9. Developing countries should foster co-operation among themselves, inter alia, in the establishment of intercountry training facilities; the development of appropriate technologies and of methodologies for training and management, and the exchange of experts and information, so that experience available elsewhere can be adapted to local conditions.

10. An effective clearing-house mechanism should be developed through international co-operation, by strengthening existing mechanisms if available, at the national, regional and international levels, to provide for the communication of selected information concerning all elements of community water supply and sanitation. An interrelated communication function should be included at every stage in all community water supply and sanitation projects.

11. Regular consultations should be held among Governments, international organizations, the international scientific community and relevant non-governmental organizations to ensure co-ordinated and accelerated action in the area of rural water supply and sanitation.

12. Co-ordination within the United Nations system should be improved at country level in order to ensure (a) a multidisciplinary approach in the development of community water supply and sanitation services; and (b) that rural water supplies and sanitation form part of integrated rural development projects.

III. Agricultural water use

The United Nations Water Conference,

Recognizing that the enormous deficit of food and agricultural production identified by the World Food Conference of 1974 calls for solutions of similar magnitude,

Accepting the vital role of water in expanding and intensifying agricultural production and in providing improved livelihood for the populations of developing countries,

Realizing that the scale of action required is immense in terms of investments and manpower for land areas to be developed and improved,

Considering that considerable national and international resources have to be allocated for the development of institutional services and human skills to provide the technical, managerial, administrative and farming expertise to meet the future demands of agriculture,

Recommends that the Action Programme on Water for Agriculture formulated below should be implemented with high priority in a co-ordinated manner at the national and international levels.

ACTION PROGRAMME ON WATER FOR AGRICULTURE

1. Faced with the enormous and continuing deficit in the production of food and of agricultural products revealed at the World Food Conference in 1974, and in recognition of the potential role of water development in correcting this deficit through activities proposed in the resolutions of that Conference, attention is drawn to the now urgent need for action to initiate a world-wide programme for the intensification and improvement of water development in agriculture.

2. Such a programme should in particular, though not exclusively, be directed at:

(a) The improvement of existing irrigation with the objectives of raising productivity with minimum cost and delay, improving the efficiency of water use and preventing waste and degradation of water resources;

(b) Developing efficient new irrigation for the further expansion of production;

(c) Improving and extending rain-fed agriculture and livestock production, through both better soil moisture management and the opening up of new land through the provision of water supplies to human settlements and livestock;

(d) The protection of agricultural land against the harmful effects of flooding and waterlogging and, where necessary, its reclamation;

(e) The introduction or expansion of fish rearing in conjunction with over-all rural development activities.

3. As an indication of a major programme component, that of irrigation and drainage development, the magnitude of a 15-year global programme is estimated at some 45 million hectares of improved and 22 million hectares of new irrigation development.

A. Recommendation on phased action programmes

4. It is recommended that national action, where appropriate with supporting assistance from the international community, be directed at formulating phased programmes for action in the development and use of water for agriculture, showing the activities required, the estimated costs and the timing, and that reports on progress made in this area should be regularly reviewed by the appropriate intergovernmental bodies.

5. It is therefore proposed that national programmes be prepared containing the essential elements for:

(a) Analysis and assessment of the problem, its magnitude and potential for development;

(b) Planning for agricultural water development within a co-ordinated framework for national development, agricultural and over-all water planning;

(c) Financing, with indications of the role of national finance and needs for external aid;

(d) Building-up of national advisory services in government and private sectors for project planning, design, construction, operation and maintenance within the framework of the programmes envisaged;

(e) Training, extension, research and strengthening of formal education to support the heavier technical demands;

(f) Establishing and improving institutions for management, administration and legislative support.

B. Recommendations on financing

6. It is recommended that national efforts be concentrated on the sound formulation and planning of attractive programmes for water use and development for agriculture, and that the mobilization of local sources of finance be encouraged. It is further recommended that, within two years of the United Nations Water Conference, phased programmes of financial requirements be available for presentation to the appropriate intergovernmental bodies.

7. It is recommended that the attention of international financing agencies be drawn to the need to adapt to the intensified programme, in recognition in particular of the severe constraints imposed by current methods of project financing for the development of water in agriculture. This calls for a shift in the apportionment of funds giving higher priority to water for agriculture. It also requires more flexibility in local currency financing and in introducing integrated programme financing in addition to traditional project financing, together with the development of new evaluation criteria and methodologies. Finally this requires greater use of national and regional financing facilities and of local human and material resources.

C. Recommendations on training, extension and research

8. It is recommended that, in conjunction with the formulation of agricultural water development programmes, and immediately following the United Nations Water Conference, the present and future needs for trained manpower should be assessed. These requirements should not be limited only to directly water-related activities, but should include supporting disciplines in agriculture and associated subjects and the development of necessary interdisciplinary skills. The manpower needs for the three distinct components of technical training, extension services and research must be evaluated at the national level. Additionally, where necessary, attention must be given to the improvement of basic levels of formal education to facilitate subsequent training.

9. Co-ordinated research programmes should be undertaken to meet selected complex research requirements of the global water-development programme. A report should be prepared for presentation to the appropriate intergovernmental bodies on world training and research facilities and activities. This report should be available within two years of the United Nations Water Conference, and should include proposals for mobilizing and expanding such resources, and for the establishment of new facilities and programmes as and where appropriate. The report should also include the continual review of progress of all training and research programmes in the field of water resources to ensure their adequacy and appropriateness in support of development. The potential role of the United Nations University should also be considered.

D. Recommendations for the promotion of national advisory services

10. With the objective of building up technical and administrative capabilities to cope with the large-scale programmes envisaged, the full use of national manpower potential and material resources should be encouraged in the planning, design, construction, operation and maintenance of water-development programmes. It is further recommended that immediate action be taken to develop the appropriate services, utilizing the skills and resources available in both public and private sectors. This would include consulting and supply services as well as development of local industries geared to the agricultural sector.

11. International aid for professional and technical training should give highest priority to the acquisition of skills in support of this specific objective, and organizations providing financial or material resources should clearly indicate their preference for the employment of local goods and services, as appropriate. The national advisory services should give particular attention to, and should be supported in the development of, technologies and the adaptation of methods and material most appropriate to local needs in the over-all aim of deriving optimal benefits from available investment, expertise and manpower.

E. Recommendations on international programme support

12. Recognizing the importance of international co-operation and support for implementing the proposed actions at the national level, it is recommended to co-ordinate international support programmes for the mobilization, planning,

co-ordination and monitoring of international financial and technical assistance in the field of water development and use for agriculture. For this, it is proposed that support be given to:

(a) The co-ordination of international financial assistance to the activities of the programme;

(b) The co-ordination of technical assistance and backstopping of the programme, including analysis and assessment of the problem, planning for agricultural water development and establishing and improving institutions;

(c) Reporting to the appropriate intergovernmental bodies on progress made on the implementation of the programme on water for agriculture.

IV. Research and development of industrial technologies

The United Nations Water Conference,

Bearing in mind the need to adopt rational water management methods,

Considering that rational water management entails not only using it economically and in the manner best calculated to prevent wastage and squandering but also using it properly so as to avoid in so far as possible the deterioration of the resource, to facilitate recycling and to maintain its potential usability for all the purposes for which it is intended,

Noting that industrial water use is one of the factors which are most intensively conducive to the qualitative degradation of water and its quantitative reduction in terms of its over-all use, contributing not only to the deterioration of the resource considered specifically and in relation to its various uses but also to the general pollution of the environment,

Recognizing that technology can contribute decisively to minimizing these negative effects of industrial water use,

Recommends that both Governments and international bodies, to the extent of their competence, include in their economic, environmental and technological policies measures to facilitate, promote and stimulate research and development of industrial technologies requiring the least possible use of water and to facilitate recycling and even the replacement of methods entailing the use of water or other liquids by the use of other non-polluting liquids or by dry methods, so as to eliminate environmental contamination in so far as possible.

V. Role of water in combating desertification

The United Nations Water Conference,

Bearing in mind the recommendations of the United Nations Conference on the Environment held in Stockholm in June 1972,

Taking into account the urgent need for concerted action to combat desertification and the forthcoming United Nations Conference on Desertification,

1. Urges all Governments to support and participate fully in the United Nations Conference on Desertification and in its preparatory meetings, including the regional meetings, in order to ensure the achievement of the objectives of the Conference;

2. Considers that water is one of the main factors limiting production and settlement in dry lands; and that lack of water, lack of the development of, or wasteful uses of, this resource are fundamental causes of many problems of desertification and environmental degradation;

3. Considers that proper planning, adequate development and wise management of water resources should receive priority in the efforts to combat desertification, to prevent environmental deterioration and to promote economic and social development in arid and semi-arid regions;

4. Recommends that nations should formulate specific action programmes to be considered by the forthcoming United Nations Conference on Desertification;

5. Recommends further that in most countries facing problems of desertification, urgent action is necessary to:

(a) Clearly define water policy in the current efforts to combat desertification and to formulate a comprehensive programme for the development and management of water resources, outlining both short-term and long-term specific objectives and targets for the future;

(b) Intensify and improve the arrangements existing for the assessment of water resources - surface as well as ground water;

(c) Consider, on the basis of prior environmental and health impact studies, a programme of surface and ground-water use and conservation with intensive mobilization of public participation on the basis of self-help. Such a programme should provide for the construction and maintenance of existing small dams or wells, with appropriate national and international assistance;

(d) Prepare feasibility studies for specific water projects expeditiously within the framework of over-all policies and programmes to combat desertification;

(e) Set up appropriate institutional arrangements at the national and regional levels in order that adequate attention be given to the problems of management and

development of surface and ground-water resources in arid and semi-arid regions, including collation of related policies, promotion of efficient use of water by developing appropriate technologies, including the application of water-saving technologies;

(f) Promote research into all aspects of water-resources technology, with special reference to the problems and needs of arid and semi-arid areas;

6. Urges that international assistance be given to assist member Governments in the formulation of specific plans and projects for the development and management of water resources to combat desertification, the location of sources of financing for the implementation of projects for use in combating desertification, and the preparation and execution of training programmes at all levels.

VI. Technical co-operation among developing countries in the water sector

The United Nations Water Conference,

Recalling General Assembly resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974, containing the Declaration and the Programme of Action on the Establishment of a New International Economic Order, 3281 (XXIX) of 12 December 1974, containing the Charter of Economic Rights and Duties of States, and 3362 (S-VII) of 16 September 1975 on development and international economic co-operation,

Noting the recommendations contained in the report of the Ad Hoc Group of Experts on Technical Co-operation among Developing Countries in Water Resources Development, 1/

Convinced that the management and development of water resources provides a promising area where technical co-operation among developing countries can be achieved,

Aware that alternate appropriate technologies in the field of the water sector have been developed by some developing countries and may be usefully applied by other developing countries,

1. Welcomes the convening of the United Nations Conference on Technical Co-operation among Developing Countries in Argentina in 1978;

2. Urges that all Governments support and participate fully in the United Nations Conference on Technical Co-operation among Developing Countries, as well as in the preparatory process for this Conference;

1/ E/CONF.70/12.

3. Invites the Administrator of the United Nations Development Programme to formulate immediately, and in consultation with the Governments concerned, a pilot project in water-resource management 2/ and submit his proposal to the Governing Council of the United Nations Development Programme at its twenty-fourth session, if possible;

4. Further recommends that, at the request of the Governments concerned, the regional commissions put forward proposals for the strengthening or, where appropriate, the establishment of regional institutes for training and research in the water sector;

5. Recommends further that the United Nations Development Programme in co-operation with the regional commissions and the United Nations system assist in promoting programmes of technical co-operation among developing countries in the field of water-resources development, which may include such areas as surface and ground-water development, drainage and reclamation, hydropower development and inland navigation;

6. Recommends further that all Governments, particularly those of developing countries, and the relevant United Nations agencies submit information to the United Nations Conference on Technical Co-operation among Developing Countries indicating the progress made in implementing recommendations for technical co-operation among developing countries in the water resource sector as delineated at the United Nations Water Conference with a view to defining future action and specific objectives in this area.

VII. River commissions

The United Nations Water Conference,

Bearing in mind the relevant recommendations of the United Nations,

Recommends to the Secretary-General to explore the possibility of organizing meetings between representatives of existing international river commissions involved that have competence in the management and development of international waters, with a view to developing a dialogue between the different river-basin organizations on potential ways of promoting the exchange of their experiences. Representatives from individual countries which share water resources but yet have no established basin-wide institutional framework should be invited to participate in the meetings. The regional commissions should be called upon to facilitate this task at the regional level.

2/ Defined in document E/CONF.70/12, para. 54.

VIII. Institutional arrangements for international co-operation in the water sector

The United Nations Water Conference,

Recognizing the imperative need for accelerated progress in the investigation and development of water resources, and its integrated management for efficient use,

Aware of the efforts being undertaken by the United Nations system at various levels to assist the countries in their endeavours to achieve these objectives,

Recognizing the difficulties in the area of co-ordination which affect the United Nations bodies in execution of their tasks,

Further recognizing the complementary roles of global and regional bodies in the United Nations system, and the role of the regional commissions as outlined in Economic and Social Council resolution 2043 (LXI) of 5 August 1976,

Deeply conscious of the fundamental importance of water for economic and social development,

Requests the Economic and Social Council, in particular in its consideration of the restructuring of the economic and social sectors of the United Nations system, to give priority consideration to the following recommendations:

(a) That at the intergovernmental level the Economic and Social Council, the Committee on Natural Resources and the regional commissions within their respective regions, should play a central role in the promotion of intergovernmental co-operation as a follow-up to the Plan of Action on integrated water resources development and management recommended by this Conference;

(b) That for this purpose, among other measures, steps be taken to intensify the work in the water sector of the Economic and Social Council and the Committee on Natural Resources through, inter alia, strengthening the secretariat support services to these organs by all United Nations organizations and bodies involved in the water resources sector and, if required, through the convening of special or subject-oriented sessions;

(c) That the proposals for interagency co-ordination presented to the Conference in the report of the Administrative Committee on Co-ordination and the Environment Co-ordination Board 3/ be examined by the Committee on Natural Resources at its fifth session with a view to submitting its recommendations to the Economic and Social Council at its sixty-third session for consideration and implementation;

3/ Present and future activities of the United Nations system in water resources development (E/CONF.70/CBP/4).

(d) That the regional commissions should, taking into account the central role of the Economic and Social Council and the Committee on Natural Resources at the global level, and the special needs and conditions of the respective regions:

(i) Assist the United Nations Development Programme and the United Nations specialized agencies and organizations, at the request of the Governments of developing countries concerned, in identifying intersectoral subregional, regional and interregional projects and preparing programmes;

(ii) Intensify their efforts in the water sector, and, with the assistance of the competent organizations of the United Nations system and at the request of the Governments concerned, enlarge co-operation among the countries in the water field at the subregional, regional and interregional levels;

(iii) Assign specific responsibility on water to an existing intergovernmental committee within the regional commissions, or if necessary, create a new one, and establish or strengthen, as appropriate, the secretariat units of the commissions dealing with water, which would serve as the secretariat of the intergovernmental committee referred to in this subparagraph;

(iv) Establish ad hoc groups of experts, as and when necessary, who should preferably be drawn from the countries of the region concerned;

(e) That, for the purposes outlined in the preceding paragraphs, the General Assembly should consider providing, as necessary, additional resources to the regional commissions and other relevant sectors of the United Nations within the budget of the United Nations;

(f) That at the country level, under the leadership of the United Nations Development Programme resident representatives, the United Nations system should intensify the co-ordination of projects and programmes undertaken at the request of the Governments of developing countries.

IX. Financing arrangements for international co-operation in the water sector

The United Nations Water Conference,

Realizing the gravity of the problem of water resources and the crisis that mankind may have to face unless timely action is taken to avert it,

Recognizing that the Action Plan recommended by the Conference is designed to promote activities at the national, regional and interregional levels to avert such a crisis,

Further recognizing that the implementation of the Plan will require, inter alia, mobilization of increased financial resources,

Taking note of the suggestion for the establishment of a voluntary fund for the development and management of water resources,

Aware of the need for additional resources required for the implementation of the Action Plan,

1. Requests the Secretary-General to prepare, on the basis of consultations with Governments and competent organizations within the United Nations system, a study of the most effective and flexible mechanisms to increase the flow of financial resources specifically for water development and management through existing organizations and proposed mechanisms and to present the study to the General Assembly at its thirty-second session, through the Economic and Social Council at its sixty-third session;

2. Recommends that additional financial allocations be made to existing:

(a) Organizations within the United Nations system, particularly the United Nations Development Programme, in order to increase the funds available to all developing and in particular the least developed countries to meet their needs in technical assistance and programmes related to water resources development;

(b) Bilateral, subregional, regional and international organizations and programmes, including the International Bank for Reconstruction and Development and the regional development banks, within their respective areas of responsibilities, and recommends that they review their terms and conditions in view of the economic and social implications of water development projects with the objective of providing the best possible terms, taking into account the results of the United Nations Water Conference;

3. Recommends further that priority be given to projects for the development and management of water resources based on co-operation among developing countries.

X. Water policies in the occupied territories

The United Nations Water Conference,

Recalling General Assembly resolution 3171 (XXVIII) of 17 December 1973, entitled "Permanent sovereignty over natural resources", and taking into consideration the statements made by the representatives of the United Nations Council for Namibia and the Palestine Liberation Organization,

Further recalling General Assembly resolution 31/186 of 21 December 1976, entitled "Permanent sovereignty over national resources in the occupied Arab territories",

Noting with great concern the illegitimate exploitation of the water resources of the countries and peoples subject to colonialism, alien domination, racial discrimination and apartheid, to the detriment of the indigenous peoples,

1. Affirms the inalienable right of the people of the countries under colonial and alien domination in their struggle to regain effective control over their natural resources, including water resources;

2. Recognizes that the development of water resources in territories subjected to colonialism, alien domination, racial discrimination and apartheid should be directed for the beneficial use of the indigenous peoples who are the legitimate beneficiaries of their natural resources, including their water resources;

3. Denounces any policies or actions by the colonizing and/or dominating Powers contrary to the provision of paragraph 2 of the present resolution, and particularly in Palestine, Zimbabwe, Namibia and Azania.

Chapter II

OTHER RESOLUTIONS

XI. Question of the Panama Canal Zone

The United Nations Water Conference,

Considering that:

(a) The sovereign use of natural resources, as a fundamental element of the economic, social and political development of peoples, is a principle recognized by the United Nations,

(b) Both the system of ownership of water and jurisdiction over that resource are of special significance for the purposes of planning and development of water resources,

(c) Those principles are closely linked to the objectives of the United Nations Water Conference,

(d) The problem of the so-called Canal Zone of Panama constitutes one of the principal impediments to the full development of water resources in the areas surrounding the cities of Panama and Colón,

Resolves to express its earnest wishes that the negotiations being conducted by the Republic of Panama and the United States of America will culminate at the earliest possible time in a just and equitable solution that will permit the Republic of Panama fully to exercise its sovereign rights in the part of its territory known as the Canal Zone and, consequently, to formulate a national policy for the full development of water resources.

14th plenary meeting
23 March 1977

XII. Expression of thanks to the host country

The United Nations Water Conference,

Recognizing the importance of international co-operation aimed at improving the development of water resources for efficient use through an integrated approach,

Convinced that the United Nations Water Conference which took place at Mar del Plata from 14 to 25 March 1977 represents a significant contribution to the efforts of the international community to find appropriate means to improve the quality and supply of water for the use of mankind,

Expresses its profound appreciation to the Government and people of Argentina, of the province of Buenos Aires and, in particular, of the City of Mar del Plata, for making possible the holding of this Conference and for their generous hospitality and their great contribution to the successful outcome of its work.

16th plenary meeting
25 March 1977

Part two

BACKGROUND TO THE CONFERENCE

Chapter III

CONSTITUTION OF THE CONFERENCE

1. The Economic and Social Council, at its fiftieth and fifty-second sessions, adopted resclutions 1572 (L) of 18 May 1971 and 1673 E (LII) of 2 June 1972 whereby it requested that consultations and studies be undertaken on the desirability of, and possible topics for, an international water conference. The Committee on Natural Resources, and a specially convened intergovernmental panel of specialists, working in collaboration with the competent specialized agencies, made recommendations to the Council accordingly.

2. On 18 May 1973, the Economic and Social Council adopted resolution 1761 C (LIV), in which it approved the holding of a United Nations water conference based on the provisional agenda suggested by the Intergovernmental Panel of Specialists. The Council decided that the conference should be held in 1977 and that it should take into account the results of the various international meetings dealing with different aspects of water resources development already scheduled. The Council gratefully accepted the offer of the Government of Argentina to act as host.

3. The Secretary-General submitted to the Committee on Natural Resources at its fourth session (March/April 1975) a progress report on preparatory work for the conference (E/C.7/48). This report outlined a number of proposed preparatory steps, including the organization of regional meetings; provision for co-operation with the specialized agencies and regional commissions; and the possible establishment of national water conference committees. The report also raised the question of the desirability of establishing an intergovernmental preparatory committee. During the discussion in the Committee on Natural Resources it was agreed that the agenda for the conference should be kept flexible and finalized only after taking into account the results of the regional meetings. On the question of an intergovernmental preparatory committee, it was recommended that the Committee on Natural Resources should assume this function.

4. At its fifty-ninth session the Economic and Social Council adopted resolution 1979 (LIX) of 31 July 1975, in which it authorized the Committee on Natural Resources to act as the preparatory committee for the United Nations Water Conference; approved the revised provisional agenda suggested by the Secretary-General in his progress report, on the understanding that the provisional agenda should be finalized by the Committee on Natural Resources; and emphasized the importance of regional meetings in the preparatory process for the Conference and to that end requested the regional commissions to hold such meetings before the end of 1976. The Council also requested the Secretary-General, in the preparatory work for the Conference, to ensure full co-ordination with the United Nations Conference on Desertification and close co-operation with relevant bodies within the United Nations system and with intergovernmental and international non-governmental institutions in a position to contribute to the preparations for the Conference.

5. At its thirtieth session, the General Assembly, taking into account, inter alia, the preparatory work for the Water Conference, and Council resolution

1979 (LIX), on 15 December 1975 adopted resolution 3513 (XXX) in which it welcomed the decision of the Economic and Social Council to convene the United Nations Water Conference, endorsed the arrangements for the preparations for the Conference as set out in Council resolution 1979 (LIX) and in particular urged the United Nations Environment Programme to provide financial support for the preparatory work of the Conference.

6. The Committee on Natural Resources, acting as the Preparatory Committee for the Conference, held its first special session in February 1976. It had before it the second progress report of the Secretary-General on preparations for the Conference (E/C.7/58 and Add.1-4) 1/ and considered a number of institutional and organizational matters. The report of the Committee (E/5778 and Add.1) 2/ was considered by the Economic and Social Council at its sixtieth session, and on 19 April 1976, the Council adopted resolution 1982 (LX) on participation in the United Nations Water Conference.

7. On 23 April 1976, the Council adopted resolution 1983 (LX) on preparations for the Conference, in which it requested the Secretary-General, in consultation with Governments, to appoint a highly qualified Secretary-General of the Conference to make all necessary efforts to finalize as soon as possible the preparations for the Conference; and requested the specialized agencies and other organizations concerned to continue their substantive support of the preparations for the Conference.

8. On 21 May 1976, the Secretary-General announced the appointment of Yahia Abdel Mageed, Minister of Irrigation and Hydroelectric Power of the Democratic Republic of the Sudan, as Secretary-General of the United Nations Water Conference.

9. In giving effect to the directives of the Economic and Social Council, the Secretary-General enlisted the assistance of the regional economic commissions for the organization of regional preparatory meetings, in connexion with which Governments were invited to submit national papers highlighting their water problems and the solutions envisaged. These meetings took place during the course of 1976 and on the basis of the five regional reports received, 3/ the Secretariat prepared consolidated action recommendations (E/CONF.70/9).

1/ A further addendum (E/C.7/58/Add.5) was issued on 17 March 1976, after the end of the first special session.

2/ Official Records of the Economic and Social Council, Sixty-first Session, Supplement No. 4.

3/ Economic and Social Commission for Asia and the Pacific (E/CONF.70/4); Economic Commission for Latin America (E/CONF.70/5); Economic Commission for Africa (E/CONF.70/7); Economic Commission for Western Asia (E/CONF.70/8). The regional report of the Economic Commission for Europe was prepared under the auspices of the Committee on Water Problems (E/CONF.70/6).

10. Also within the framework of the preparatory activities, the Secretary-General invited Member States to submit thematic papers illustrating their experience in the subject fields envisaged under the provisional agenda. The Secretariat subsequently issued an overview of the thematic papers received (E/CONF.70/10), which was prepared after review, revision and endorsement by an ad hoc intergovernmental working group.

11. The Secretariat also presented, in co-operation where appropriate with ad hoc expert groups and the specialized agencies concerned, a number of strategy documents in particular fields, 4/ and several basic background papers, including an analysis of the policy options open to the Conference. 5/

12. The Committee on Natural Resources at its second special session in January 1977 considered the third progress report of the Secretary-General on preparations for the United Nations Water Conference (E/C.7/61) outlining action taken by the Secretary-General since the first special session in February 1976. This report, inter alia, gave an account of the action taken to follow up those recommendations made by Habitat: United Nations Conference on Human Settlements that related directly to water, and of co-operation with the United Nations Conference on Desertification.

13. In the report on its second special session (E/L.1742) 6/ the Committee recommended to the Economic and Social Council to approve the draft provisional rules of procedure contained in annex I to the report; to approve the draft provisional agenda in annex II to the report; to approve the recommendations regarding the organization of work of the Conference proposed in document E/C.7/L.51 7/ with the revised allocation of work of the two committees of the

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4/ At the request of the Secretary-General of the Conference, four papers were prepared, devoted respectively to "Water for agriculture" (E/CONF.70/11); "Technical co-operation among developing countries with regard to water resources development" (E/CONF.70/12); "Assessment of water resources: networks, surveys, services and related facilities: present status and requirements by 2000" (E/CONF.70/13); and "Report on community water supplies" (E/CONF.70/14).

5/ "Resources and needs: assessment of the world water situation" (E/CONF.70/CBP/1 and Corr.1), "The promise of technology: potential and limitations" (E/CONF.70/CBP/2 and Corr.1 (Arabic and English only) and Add.1), "Policy options" (E/CONF.70/CBP/3) and "Present and future activities of the United Nations system in water resources development" (E/CONF.70/CBP/4 and Add.1 and 2).

6/ Document E/L.1742 is an extract from the Committee's report, which will be issued in its entirety as Official Records of the Economic and Social Council, Sixty-third Session, Supplement No. 2 (E/5907).

7/ A consolidated document on establishment of committees and organization of work was subsequently issued under the symbol E/CONF.70/3.

Conference approved by the Committee and reproduced in annex III to its report; and to transmit the reports of the task forces on community water supply, water for agriculture and technical co-operation among developing countries to the Conference.

14. At its organizational session for 1977, held in January 1977, the Economic and Social Council, in decision 207 (ORG-77), approved these recommendations.

Part three

PROCEEDINGS OF THE CONFERENCE

Chapter IV

ATTENDANCE AND ORGANIZATION OF WORK

15. The United Nations Water Conference was held at Mar del Plata, Argentina, from 14 to 25 March 1977.

16. Pre-Conference consultations open to the participation of all States invited to the Conference were held on 12 March 1977 at Mar del Plata to consider a number of procedural and organizational matters, under the chairmanship of J. P. Bruce (Canada), Vice-Chairman of the Committee on Natural Resources, which had acted as the Preparatory Committee for the Conference. The report of the meeting (E/CONF.70/L.1) was submitted to the Conference, which agreed to use the report as a basis for consideration of the agenda items before it.

A. Attendance

17. Representatives of the following 116 States took part in the Conference:

Afghanistan
Algeria
Angola
Argentina
Australia
Austria
Bahrain
Bangladesh
Belgium
Benin
Bhutan
Bolivia
Botswana
Brazil
Bulgaria
Burundi
Byelorussian Soviet Socialist Republic
Canada
Cape Verde
Central African Empire
Chad
Chile
Colombia
Costa Rica
Cuba
Cyprus
Czechoslovakia
Democratic People's Republic of Korea
Democratic Yemen
Denmark
Dominican Republic
Ecuador
Egypt
El Salvador
Ethiopia
Finland
France
German Democratic Republic
Germany, Federal Republic of
Ghana
Greece
Guatemala
Guinea-Bissau
Haiti
Holy See
Honduras
Hungary
India
Indonesia
Iran
Iraq
Israel
Italy
Ivory Coast

Jamaica
Japan
Kenya
Kuwait
Lesotho
Liberia
Libyan Arab Jamahiriya
Madagascar
Malaysia
Mali
Mauritania
Mexico
Mongolia
Morocco
Nepal
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Norway
Oman
Pakistan
Panama
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Republic of Korea
Romania
Samoa
Saudi Arabia
Senegal
Sierra Leone
Socialist Republic of Viet Nam
Spain
Sri Lanka
Sudan
Swaziland
Sweden
Switzerland
Syrian Arab Republic
Thailand
Trinidad and Tobago
Tunisia
Turkey
Uganda
Ukrainian Soviet Socialist Republic
Union of Soviet Socialist Republics
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United Republic of Tanzania
United States of America
Upper Volta
Uruguay
Venezuela
Yemen
Yugoslavia
Zaire
Zambia

18. Representatives of the United Nations Council for Namibia also participated.

19. A representative of the Palestine Liberation Organization also participated.

20. Members of the Secretariat from the following United Nations offices were also present: Department of Economic and Social Affairs, Office of the United Nations Disaster Relief Co-ordinator, Economic Commission for Europe, Economic and Social Commission for Asia and the Pacific, Economic Commission for Latin America, Economic Commission for Western Asia, United Nations Environment Programme, United Nations Industrial Development Organization. The following United Nations bodies were also represented: United Nations Children's Fund, United Nations Development Programme, World Food Programme (joint United Nations/FAO programme), Consultative Group on Food Production and Investment in Developing Countries (joint FAO/IBRD/UNDP body.

21. Representatives of the following specialized agencies also attended: International Labour Organisation, Food and Agriculture Organization of the United Nations, United Nations Educational, Scientific and Cultural Organization, World

Health Organization, International Bank for Reconstruction and Development, World Meteorological Organization. The International Atomic Energy Agency was also represented.

22. Observers for the following intergovernmental organizations, including international river commissions, participated in the Conference: Council for Mutual Economic Assistance, European Economic Community, Inter-American Development Bank, League of Arab States, Organisation for Economic Co-operation and Development, Organization of American States, Instituto Interamericano de Ciencias Agrarias, Instituto Italo-Latinoamericano, Comisión Mixta Brasileño-Uruguaya para el Desarrollo de la Cuenca de la Laguna Mirim, Comisión Mixta Paraguayo-Argentina del Río Paraná, Comisión Técnica Mixta Salto Grande, Comité Intergubernamental Coordinador de los Países de la Cuenca del Plata, Entidad Binacional Paraguayo-Argentina Yacyretá, International Joint Commission (Canada-United States), Lake Chad Basin Commission and the Mekong Committee.

23. Observers for 63 non-governmental organizations invited to the Conference also participated.

B. Opening of the Conference and election of the President

24. The Conference was opened on behalf of the Secretary-General by Mr. Gabriel van Laethem, Under-Secretary-General for Economic and Social Affairs, who read out a message addressed by the Secretary-General to the Conference. The Secretary-General expressed his deep regret that responsibilities concerning the United Nations Security Council had prevented him from attending the opening. The Secretary-General added that he attached the highest importance to the Conference, the subject of which was closely related to United Nations aspirations for the attainment of a more equitable world order. An adequate supply of water was essential to every aspect of the socio-economic development to which the United Nations was committed and the Conference should therefore apply itself to devising practical proposals which recognized that equitable patterns of human development would require increased emphasis on the role of water-resource management.

25. It was important to grasp the interrelationship between problems of water and those of the environment, population, food supplies and human settlements, all of which were very much the concern of the United Nations. The world's population, for instance, would have grown by the end of the century from its present 4,000 million to 6,000 or 7,000 million, and correspondingly increased supplies of water would be needed to provide the food, manufactured goods and energy to sustain this growth. It was thus evident that Governments would need to give immediate attention to ways in which the earth's fixed global stock of water could be used wisely and efficiently, in terms of comprehensive programmes, for many decades ahead.

26. For the immediate future, the most urgent requirement was to develop strategies to provide water for food production and to improve community water supplies. Strategies were also needed for the mitigation and control of flood

and drought and to prevent the pollution of water supplies. It would be wrong to think of resource management problems of these kinds in purely technical or economic terms. In many cases the political dimension might be the critical factor. Many of the great river systems of the world were common to two or more countries, and co-operation among countries would become increasingly critical as the pressures increased for alternative uses of limited water resources.

27. The mere fact that the United Nations had convened a world water conference was in itself a most encouraging development; other positive elements were the seriousness of purpose and enthusiasm engendered by the regional preparatory meetings and the goodwill shown by Governments in sharing their national experience with others. It could accordingly be hoped that the Conference would serve as a point of departure for an international process of consultation and co-operation in water-resource management. If the political will was not found to co-operate in a hitherto unprecedented fashion, a potential water crisis in many parts of the world would have to be faced. It was thus incumbent upon the nations to act in terms commensurate with the magnitude of the challenges posed.

28. His Excellency Jorge Rafael Videla, President of the Republic of Argentina, in his address to the Conference extended a cordial welcome to participants and touched on the main elements that were precipitating the world water crisis - the alarming increase in world population, the enhanced requirements of industry, the needs of urban concentrations and the often irrational utilization of natural resources, and increasing pollution. Governments must co-operate in overcoming the crisis by seeking to remedy unjust situations arising from lack of means, in order to give peoples access to decent living conditions in keeping with the social and cultural progress of the modern world.

29. Perhaps the most important of the tasks before the Conference was to identify the over-all measures to be adopted for the solution of water-related problems and to propose strategies and specific action to alleviate and finally overcome the crisis. The development of world technology showed how the resources provided by science, when used in an appropriate and timely manner, had made it possible to eliminate the serious problems with which mankind had from time to time been faced. The President was therefore confident that the legal and technical instruments which would enable peoples to overcome the imminent water crisis would be developed and placed at their disposal.

30. The President of the Republic cited the great variety of water-related problems in Argentina, including irregular seasonal and spatial distribution of rainfall, erosion, sedimentation, aridity and flooding. However, beyond such local preoccupations, responsibility for which lay with individual States, international co-operation was essential for the full development of water resources that, by their nature and extent, tended to transcend national boundaries. Argentina, in keeping with its traditional policies, therefore advocated solutions to be shared by the nations of the Latin American subcontinent, on the basis not only of geographical situation, but also of their historical, social and economic circumstances.

31. The Under-Secretary-General for Economic and Social Affairs made a statement in

which he said that water was associated with all human activities, including production, consumption and recreation, and that it could not be treated in isolation from the other components of economic development. Because it had been considered to be abundant and renewable, and available free or at low cost, water had too long been wasted; and because its management had traditionally been within the public domain, water had not been the subject of research efforts comparable to those from which the great industrial technologies had benefited.

32. While the solution of water problems depended in part on scientists and engineers, it was primarily the responsibility of politicians to adopt the appropriate measures at the national level and determine the course of the co-operation that was imperative internationally. In the promotion of co-operation among developing countries, to which the United Nations attached such paramount importance, a prominent role could be played by the regional economic commissions. If the Conference could help to co-ordinate actions which hitherto had been inadequate or dispersed and to integrate measures and projects under a joint strategy, it would have largely attained its goal.

33. The Conference then elected by acclamation His Excellency Luís Urbano Jáuregui, Head of the delegation of Argentina, as President of the Conference. In taking up his functions, the President said that mankind had long been accustomed to regard the earth as mere territory to be conquered, with limitless capacity and fertility, in which it was only necessary to apply zeal and knowledge to ensure human well-being. At the same time, a prevailing conviction had emerged that the magnitude of the problems facing humanity was so great that any attempt to overcome them would be futile.

34. Confronted by that dilemma, people were learning that the earth's resources were not limitless, that water was a scarce asset and that millions in the world suffered from a lack of it while other millions were wasting such a vital resource; and that the present-day heirs of the situation must now undertake the communal task of administering in justice and in harmony with nature an element which was of such vital importance for life.

35. In these circumstances, in which the use and conservation of water could not remain isolated problems or problems that could be solved by a specific sector or region - since they constituted a single theme: water as man's heritage for promotion of the common good - the United Nations Water Conference could thus mark the start of a new era, that of water rationally used, conserved and harmonized with the human environment and with nature.

C. Adoption of the rules of procedure

36. At its second plenary meeting, on 14 March 1977, the Conference adopted the provisional rules of procedure approved by the Economic and Social Council (E/CONF.70/2).

D. Adoption of the agenda

37. The Conference, at its second plenary meeting, adopted the following agenda (E/CONF.70/1):

1. Opening of the Conference
2. Election of the President
3. Adoption of the rules of procedure
4. Adoption of the agenda
5. Establishment of committees and organization of work
6. Election of officers other than the President
7. Appointment of the Credentials Committee
8. Report of the Credentials Committee
9. General debate
10. The world water situation: prospects, problems and policy options
11. Recommendations for action
12. Adoption of the report of the Conference

E. Establishment of committees

38. In accordance with rule 4 of the rules of procedure, the Conference, at its second meeting on 14 March 1977, established a credentials committee, composed of the following States: Ecuador, El Salvador, Ivory Coast, Malaysia, Nepal, Netherlands, Union of Soviet Socialist Republics, United States of America, Zambia.

39. At the same meeting, the Conference established two main committees of the whole to study the substantive items of its agenda. It also decided upon the following allocation of work:

Plenary:	items 1 to 9 and item 12
Committee I:	items 10 and 11
Committee II:	items 10 and 11

It was also agreed that the subject-matters included in items 10 and 11 should be divided between Committees I and II as given below:

Committee I

Assessment of water resources

Water use and efficiency:

Measurement and projections of water demand

Efficiency in distribution and regulation

Agricultural water use

Industrial water use

Community water supply and waste disposal

Hydroelectric power generation

Inland navigation and other uses

Environment and health:

Environment and health

Pollution

Committee II

Planning, management and institutional aspects:

National water policy

Institutional arrangements

Legislation

Public participation

Instruments to improve the efficiency of water use

Development and application of appropriate technologies

Flood loss management

Drought loss management

Education, training and research:

Education and training

Research needs

Regional co-operation:

Development of shared water resources

Specific regional recommendations

International co-operation:

International technical and advisory services

International research programme

Financing arrangements for water development

Co-ordination of United Nations programmes for implementation of action proposals.

With regard to the division of work between the committees, it was stressed that while the subject-matter headings had been based for convenience on the items listed in the document containing the consolidated action recommendations (E/CONF.70/9), these should be considered as indicative only. Consequently, all relevant documentation pertaining to items 10 and 11 should be accommodated within the work of the committees on a continuing basis and relevant issues should be transmitted to each committee as appropriate. Moreover, provision should be made for close contact between the committees with a view to facilitating the transfer of items for discussion from one to the other, whenever such transfer should appear to be useful and relevant.

F. Election of officers other than the President

40. At its second plenary meeting on 14 March 1977, the Conference elected by acclamation as Vice-Presidents the following 18 States: Canada, Egypt, Ethiopia, German Democratic Republic, Hungary, India, Iraq, Japan, Mauritania, Mexico, Nigeria, Norway, Peru, Spain, Syrian Arab Republic, Union of Soviet Socialist Republics, Venezuela, Zaire.

41. It also elected Malin Falkenmark (Sweden) as Rapporteur-General.

42. The Conference elected Julius Gikonyo Kiano (Kenya) as Chairman of Committee I and B. M. Abbas (Bangladesh) as Chairman of Committee II.

43. In accordance with rule 6 of the rules of procedure, the Committees elected their own vice-chairmen and rapporteurs as follows:

Committee I: Davoud Hariri (Iran), Z. Kaczmarek (Poland), R. E. Lawson (Jamaica), Vice-Chairmen; and Grant Mills (Canada), Rapporteur.

Committee II: Luis Garcia (Guatemala), Temel Iskit (Turkey), Vaclav Plechác (Czechoslovakia), Vice-Chairmen; and Nii Boi Ayebotele (Ghana), Rapporteur.

G. Programme-budget implications for the United Nations of Conference decisions

44. The Conference took note of a statement by the Secretariat to the effect that inasmuch as all Conference decisions having programme-budget implications for the United Nations had the status of recommendations to the Economic and Social Council regardless of their specific description or form, the Secretariat would submit those programme-budget implications to the Council at the time when the report of the Conference came before the Council for consideration.

Chapter V

SUMMARY OF THE GENERAL DEBATE

45. The general debate was conducted in 14 plenary meetings, between 14 and 23 March 1977. The Conference was addressed by the representatives of 93 States and by representatives of 21 organizations.

Opening statement by the Secretary-General of the Conference

46. At its 2nd plenary meeting on 14 March 1977, the Conference heard an opening statement by Yahia Abdel Mageed, Secretary-General of the Conference, who observed that for the first time the range and complexity of the problems of water development confronting mankind were being taken up in their totality by a world forum in a systematic and comprehensive manner.

47. Water for agriculture and community water supplies were subjects that merited priority attention by the Conference. Equally important were problems related to pollution and shared water resources. Still other areas of critical concern included the incidence of floods and droughts, water for industry, hydroelectric power generation, inland navigation and matters related to environment and health. One of the main obstacles to effective action to improve all these areas was the scarcity of capital and foreign exchange. Ways and means would therefore have to be found for the more effective mobilization of financial resources, both internal and external.

48. The Conference provided a unique opportunity for formulating an international consensus on a number of policy and operational measures and if such a consensus were to emerge, the Conference might then consider the desirability of incorporating it in the form of a declaration which would provide a framework to guide policies for future development of water resources.

49. On the subject of community water supplies and water for agriculture, the Conference had an obligation to formulate a concrete plan of action. It might be recalled that nations had already expressed their commitment at Habitat: United Nations Conference on Human Settlements to provide clean water for all peoples by 1990, if possible. There was also the question of self-sufficiency in food production - in spite of past efforts and achievements, there were now over 480 million deprived and hungry people in the world, and in the absence of a dramatic breakthrough, they would continue to increase by over 12 million yearly. In consequence, it was a duty of the nations to assess what they could achieve with their own national financial resources and to indicate specifically what they might need in the form of external assistance.

50. There was also a crucial need for the Conference to formulate recommendations that would promote co-operation among developing countries in the water sector, in order to combat pollution, floods and droughts, and to provide the capital and trained manpower for future development. Regarding shared water resources, if any

general agreement emerged on the need for a code of conduct, this would be a significant advance in facilitating future co-operation among nations.

51. Implementation of the recommendations that might be formulated at the Conference would need to be considered at different levels - national, regional and international - and in the latter cases the United Nations system would have an important role to play. While there was considerable room for better co-ordination in the system, a number of proposals had already been worked out for more effective co-ordination. The Conference provided an unprecedented opportunity for Governments to impart new vigour to multilateral action and to enable the international community to carry out its expanded role in a more dynamic manner. The success of the Conference would not be measured at Mar del Plata, but by posterity, and by the degree to which the deliberations of the Conference would influence the course of events over the next two decades.

General considerations

52. The debate reflected the wide range of experience of nations, whether arid or humid, developed or developing, in the water sector. It also reflected varying levels of development and sophistication in water management and demonstrated how the degree of water-resource development was often an indicator of the degree of over-all socio-economic development and well-being in a society. It also reflected serious concern about the necessity of rapid, resolute and purposeful action in order to give every human being easy access to clean water as a basic ingredient of life and the conviction that expanded irrigation in arid and semi-arid countries would be a major input towards the substantially increased food production necessary to overcome the present food crisis. In the debate the following main views were expressed.

53. The United Nations Water Conference should be viewed as an important link in a series of integrally related conferences that had hitherto focused on problems of the environment, population, food supplies and human settlements, and would be continued in the near future with the dialogues already scheduled on desertification; science and technology for development; and technical co-operation among developing countries. The aim of these conferences, which should be viewed in the context of the current endeavours within the United Nations system to achieve a new international economic order, was to arrive at agreed measures for the improvement of the living conditions of all peoples, which would inevitably necessitate the redistribution of resources both nationally and internationally, and the application of appropriate institutional and technical machinery to that end.

54. The task of the Conference was to adopt policies for the further development and efficient utilization of water with the basic objective of promoting the level of preparedness needed to avoid a water crisis of global dimensions within the next few decades. The need for an intensive land and water development programme to overcome food and crop deficits before the end of the century had been accepted as being of the utmost urgency. Targets had been set by Habitat concerning the

establishment of safe water supplies for all peoples by 1990 and the parallel improvement of waste disposal and environmental sanitation. The task was immense and called for massive and intensive national activity with appropriate support from the international community.

55. It was both hoped and expected that the Water Conference would make its own specific contribution towards a new international economic order. In this context the world's water resources and their rational utilization would be of vital significance. A number of representatives stressed the special importance of water development to the improvement of living conditions in rural areas of developing countries and in enhancing the quality of life for women, who in some countries had to spend many hours in collecting water supplies for their families. Strong support was expressed for adoption of common measures to solve outstanding water problems, including the formulation of action recommendations concerning the promotion of scientific research and technological development, together with the provision of the necessary facilities, equipment and training.

56. It was generally considered that the Conference was significant not only in reflecting over-all concern about the quality of life in the international community, but that it also had an important role in voicing the need to reduce existing inequities as between developed and developing countries. In that connexion, various representatives expressed the view that water as a natural resource had a strategic nature and a commercial interest for all countries; it was a determining factor in economic independence and water management was consequently a politcal tool for encouraging development and political progress. The view was also expressed that the Conference was of special importance for the developing countries since their populations depended primarily on the land for subsistence, and they could not intensify agricultural production without overcoming endemic problems such as poor water distribution, lack of proper drainage and/or irrigation, shortage of potable water supplies, and the lack of financial resources, proper statistical data and technical personnel.

57. Water availability was recognized as one of the most crucial factors in any programme designed to improve the living standards of the world community. Despite man's ingenuity in exploiting natural resources, water supplies were necessarily characterized by fluctuations beyond his immediate control. Since earth's processes of supply could not indefinitely withstand man's accelerating demand for water, and given the additional problems of pollution from man's activities, water management had become a central consideration which to the maximum extent possible must be taken into account before the traditional approaches, which were usually aggregated under the term development. Water resources development would of course continue to be necessary, but unthinking exploitation of natural systems clearly could no longer be possible.

58. It was accordingly essential for the Conference to devise adequate ways and means to meet social demands for water, taking into account the fact that the resource itself was quantitatively fixed and that its management must be controlled in such a way as to accommodate the long-term demands imposed by the world growth of population, agriculture and industry.

59. Several speakers emphasized that the Conference provided a unique opportunity to foster progress in the action necessary at the international level in order to manage and develop water resources shared by two or more States, 8/ and to muster the necessary international public opinion that could not only lead to enhanced co-operation but also encourage it. It would be necessary to harmonize those national measures which exerted effects on other States, to envisage common standards for pollution control and to devise generally applicable rules for co-operation in the utilization and conservation of water resources through development of appropriate machinery, especially by bilateral or multilateral agreements. Some speakers stressed that the Conference could also, by emphasizing the great need for progressive development and codification of rules of international law on shared water resources, promote efforts in this direction.

60. It was generally noted that one of the main objectives of the Conference should be to try to make the peoples of the world aware of their respective water situations and of the importance of a sound water economy. It was frequently stressed that the Conference should also impress policy-makers with the urgency of taking appropriate action to promote free exchange of experience so as to arrive at the most practical new approaches to solving local, regional and international water problems; and to establishing effective means of encouraging co-operation and concerted action among existing agencies on a continuing basis.

61. One speaker emphasized the role of the Conference in determining the action necessary to combat the effects of ever-increasing pollution, to protect the quality of existing water resources and to control rigidly the increase of discharge of waste into bodies of water.

Assessment of water resources

62. Many representatives emphasized that assessment of water resources was an important prerequisite to planning, development, policy formulation and the operation and management of water resources in their multiple uses. In many countries the lack of basic hydrological and meteorological data, and the statistical unreliability of such data were among the major constraints in the evaluation of water resources with respect to quantity and quality.

63. Because the availability of water resources varied considerably in space and over time, and unplanned development could aggravate this natural variability, the establishment of integrated, reliable data systems, to include the functions of gathering, storage, retrieval, analysis, dissemination and use of data, was suggested by many representatives for priority consideration in national policy formulation in the developing countries. In this connexion, the exchange of data was recommended where possible and technically justifiable.

8/ Certain countries prefer the term "transboundary water resources" rather than "shared water resources", cf. foot-note 9/ between paras. 112 and 113 below.

64. It was stressed that in some cases the urgency of the need to develop water resources necessitated the formulation of plans and the initiation of projects on the basis of limited data.

65. The World Meteorological Organization had estimated the cost of making a reliable assessment of the water resources in all countries by the year 2000 at about $1,500 million for surface water investigations and five to ten times more for ground water. It was noted that although the cost would thus be high, the potential benefits to all national economies would also be very high.

Water for agriculture

66. Most representatives stressed that agricultural production could be increased through irrigation, including the bringing of potentially irrigable lands under irrigation and increasing the productivity of those lands presently under irrigation. The magnitude of a 15-year global target had been estimated by the Food and Agriculture Organization of the United Nations at some 45 million hectares of improved, and 22 million hectares of new, irrigation development at a total cost of nearly $100,000 million. It was frequently stressed that in order to reach this goal and derive full benefit from planned programmes of water development, a far-reaching education and training programme would be necessary.

67. It was further emphasized that, at the national level, an increase in agricultural production, including food, feed and fodder, was essential in order to keep pace with the basic needs of a growing population.

68. Many representatives suggested that the adoption of a technological package to include (a) fertilizers; (b) improved crop varieties; (c) plant production; (d) mechanization; (e) proper design, operation and on-farm management of irrigation systems; and (f) support to extension and research programmes, should be promoted. In this connexion, increasing attention should be given to improved irrigation practices and on-farm management of water and to solving soil salinity and drainage problems. It was also suggested that efforts should be made to concentrate to a high degree on crops that use less water. Suggestions were also made that water should be given a more prominent role in programmes such as that of the Food and Agriculture Organization of the United Nations.

69. In the opinion of many representatives, exchange of information and experience among the developing countries and adoption of appropriate technologies from the developed countries should be enhanced to the extent possible.

70. The view was expressed by a number of representatives that farmers should participate in the planning, operation and management of irrigation projects; the training of technicians and managers and the accessibility of credit were also considered components of considerable importance.

71. Since agriculture was by far the greatest consumptive user of water, accounting for up to 90 per cent, particularly in developing countries, it was urged that the

efficiency of its storage, distribution and application on the farm be improved in project operations. Even small improvements in irrigation efficiency could result in large savings of water. Systematic attempts were reported to increase efficiency in the use of water by moving from surface irrigation to sprinkling and later to more sophisticated methods such as direct dripping at the roots of the plant.

Community water supplies

72. There was widespread agreement on the need to implement the recommendations of Habitat: United Nations Conference on Human Settlements, with special reference to the provision of adequate and safe water supplies for all, particularly for the rural communities in developing countries. It was reported that, globally speaking, to reach this goal for the urban areas would imply annual investments that would have to be doubled in comparison with those made during the first five years of the Second United Nations Development Decade, while for rural water supply alone four times more would have to be invested. This would be a heavy task but many speakers expressed solidarity and political will in order gradually to implement the action programme needed. The need to attach high priority to meeting the 1990 target for providing all peoples with safe water was repeatedly stressed and it was also considered a priority for the Conference to formulate a step-by-step approach to achieve this aim.

73. It was suggested that countries should adopt specific and detailed plans on water-supply and sanitation services suited to their individual and specific conditions and that the international community should adopt a new approach to supporting increased national commitments of the developing countries through financial and other means.

74. Several representatives stressed particularly the necessity for a programme focusing on the interests of the most disadvantaged peoples in order to provide for a just distribution of resources. An important instrument in this respect would be massive information campaigns among those who would be affected by these measures. One representative expressed the view that countries with less than abundant water supplies or high population growth in areas of marginal water availability should consider policies to reduce population growth rates and encourage internal migration.

75. Recommendations were made by many representatives to designate the period 1978-1988 as the "International Water Resources Development Decade" for the purpose, inter alia, of accelerating the provision of adequate and safe water supplies and sanitation services.

76. Should this proposal be found acceptable, the following guidelines were suggested for consideration: during the decade each country should organize events in order to make national public opinion more aware of the various aspects of community water development and should accord proper priority to this problem in deciding budgetary allocations.

77. It was also suggested that, in a spirit of fostering world peace and co-operation in combating thirst and disease in the urban and rural areas, particularly in developing countries, progressive steps could be taken to reduce armaments and a small part of the resulting savings could be credited to a fund which it was proposed could be set up to accelerate water resources development. Many representatives expressed strong support for these proposals. Other representatives indicated, on the contrary, that the same result could be more efficiently achieved without it being necessary to create any new fund.

Pollution, environment and health

78. Degradation of the quality of water resources was discussed by many speakers. Several representatives called for determined action to combat the effects of pollution. It was frequently emphasized that pollution had risen with increasing industrialization and urbanization, which required increased man-forced flows of water and as a result produced heavier effluent discharges into the water system - rivers, lakes and other water bodies. Pollution was in fact becoming a universal problem. Some speakers stressed that the problem of quality management was even more complex where transfrontier pollution had endangered the quality of water in other countries. It was suggested that legal and administrative measures relating to shared water resources be developed and enacted by all countries concerned. Such measures could be based on acceptable standards of quality. It would be desirable that least-polluting technologies be employed and policy instruments be instituted, including the use of effluent charges related to the amount of pollution discharged into rivers.

79. Many speakers emphasized that safe effluent disposal systems should receive parallel consideration and equal priority with the question of the provision of an adequate potable water supply, particularly in the case of developing countries. It was stressed that in the development of new water projects proper attention should be given to the question of environmental quality, and management schemes should include suitable strategies for maintaining the quality of water.

80. It was considered imperative to back waste-water treatment with financial and legislative support. The view was expressed that in this connexion, developing countries must be in a position to acquire the necessary purifying equipment at equitable prices. Some speakers emphasized that water-substituting technology was also important in reducing industrial water requirements and hence the incidence of water pollution.

81. A number of speakers urged that it would be desirable to reduce to a minimum and ultimately eliminate the disposal of waste waters in water bodies. The opinion was expressed that non-polluting technology itself could be developed. In other instances waste could be profitably used as an input in the manufacturing process. As a result of the large number of optional technologies available, developing countries should be scrupulous in their choice of specific technology.

82. There was a general belief that determined action was needed to protect the quality of existing water supplies and that all countries should enact legislation to regulate effluent discharge. Some speakers pointed out that elimination of transfrontier pollution, especially when transferred by the atmospheric branch of the hydrological cycle, required not only international co-operation but also international understanding.

83. The view was further expressed that international standards should be established for the measurement and control of water quality and that standards should be developed first for international rivers and could be followed by guidelines for national river standards.

84. Attention was drawn by some representatives to the problem of deterioriation of the quality of ground water inevitably resulting from highly concentrated and intensive utilization which upset the hydrological balance. It was also emphasized that developing countries should be aware of potential pollution dangers to ground water through the presence of sewage, of sea-water and industrial pollution.

85. Several speakers called for environmental assessment before any water-development project was launched. In this connexion, the concept of an "ecological approach" was introduced, by which the environmental hazards posed by any development activity would be anticipated and corrective measures would be incorporated into the planning process to the extent deemed feasible.

86. It was pointed out by a number of representatives that water-development projects might have unforeseen adverse consequences affecting human health. Several representatives emphasized the efforts being made to investigate and stop the spread of water-borne diseases that might result from large-scale water projects. It was deemed important to promote the participation of ministries and governmental agencies responsible for health from the earliest stages of planning in the formulation of relevant legislation and regulations and during the implementation of water-related development projects.

Water policy, planning and management

87. It was generally agreed that considerable efforts on a world-wide scale would be needed to provide the necessary supply to meet ever-increasing demands. Many countries were already experiencing serious difficulties in satisfying the growing requirements among urban and rural settlements, and for industrial and agricultural uses. In many regions of the world, water was being used inefficiently or in excess of actual needs. Unless planned and effective measures were taken, water-related problems were likely to become a serious barrier to social and economic development in many parts of the world.

88. More readily available water resources had already been largely developed in many countries and further development in these countries would require great investments. It might therefore prove more prudent to improve the efficiency in utilization of existing supplies, rather than develop new resources, although this would necessitate more complex planning processes.

89. It was observed that heavy investment in water-resource development would be imperative in some countries. It was furthermore stressed that because of increasing pollution, higher treatment costs in reaching acceptable standards could be foreseen.

90. Means to regulate the uneven distribution in time and space of surface water would include better utilization of ground water, the conjunctive use of surface and ground water and the construction of facilities for collecting surpluses from rainy seasons in surface and subsurface reservoirs and for transporting water over long distances, including interbasin transfer.

91. In certain developing countries, consideration might appropriately be given to ways of increasing usable water supplies through non-conventional methods, such as desalination techniques, already in use in some countries, cloud-seeding and small-scale geothermal exploitation.

92. It was considered that the practice of transbasin and interbasin transfers and development of non-conventional sources would be expected to increase significantly in a few cases before the end of the century. Furthermore, it was stated that demand might be stabilized or even reduced. One representative reported that, as a secondary effect of upgraded environmental regulations, industrial water requirements had rapidly decreased in his country due to increased use of water-saving technologies: the total amount of water used for water-supply of communities and industries was at present only half of what had been envisaged only 10 years before.

93. It was noted that in order to achieve better protection of water resources from contamination by industrial effluents, it would be necessary to apply on a broad scale recirculated water supply systems, re-use of waste water, removal of pollutants from effluents and their use as raw materials. Attention was also drawn to the importance of the development and application of technological processes that used little water, were harmless and did not produce waste and to the fact that work in those fields could provide an important basis for international co-operation.

94. There was general consensus that increased attention should be given to the integrated planning, development and management of water resources. The necessity for integrated water and land-use planning was stressed. In acknowledging the urgency of these needs for an expanded and strengthened effort at the national level, virtually all representatives cited programmes in progress and problems experienced in medium- and long-term planning. In many countries national master plans for the development of water resources had been evolved and projects implemented or were in the process of being developed.

95. An integrated interdisciplinary approach to the formulation of water policies and appropriate legislative and administrative arrangements were singled out as important components of national water management. It was agreed that consideration should not be restricted exclusively to the cost-effectiveness of planned water schemes but should also include consideration of optimum social benefits, environmental conditions and the protection of human health and well-being.

96. It was generally acknowledged that appropriate legislation was fundamental to the optimum development of water resources and should be periodically reviewed and updated. While many representatives stressed the desirability of having all water-related law codified into a unitary legal instrument, others noted that their law was either in the process of codification or still governed by tradition. Still others stated that water law, and in consequence water development in their countries, was founded on the principle that water should be perceived as a publicly-owned resource. The critical importance of properly-framed legislation was noted by representatives of developed industrialized nations in connexion with the avoidance and control of pollution and the wise management of shared water resources.

97. With regard to proper co-ordination of all water-related national activities, certain representatives attached importance to the need for effective institutional arrangements, and for a centralized authority responsible for policy preparation and implementation. While fully endorsing the need for effective co-ordination at the national level, other representatives pointed out that a decentralized approach to water policy making and implementation was more appropriate in a federal system of government.

98. Considerable attention was paid by representatives of both developed and developing countries to the importance of technology in water resources development and management. However, some of them recognized that sophisticated technologies were not always easily transferred to, nor were they necessarily appropriate for meeting the needs of developing countries where a greater reliance on local materials, technical know-how and labour recommended itself. Many representatives emphasized that only the introduction of more advanced technologies could speed up the social progress and promote the social well-being of those countries. It was also observed that, in the business transactions governing the transfer of technology, the developed countries should adjust themselves to the needs of the developing countries. It was also important to strike a suitable balance between labour-intensive and capital-intensive technologies, while emphasizing the need to reduce unemployment and underemployment, particularly that of unskilled labour. In this context, it was acknowledged that technical co-operation among developing countries, as a supplement to the existing bilateral and multilateral technical assistance programme, offered considerable untapped potential and that criteria for choice of technology required careful consideration.

99. Information programmes for the general public were emphasized as important means to ensure active public participation in all water-related activities including the planning, development and conservation of water resources.

Natural hazards

100. Many countries of the world were prone to hazards caused by extremes of water - floods and droughts - and a number of representatives drew attention to these problems. The rapid concentration of dwellers in flood plains, and the poor ecological management of areas susceptible to droughts, had contributed to the

seriousness of these hazards in terms of loss of life and damage to physical facilities and, in some cases, to damage of the total ecological balance as well as cultures. At present the negative economic impact of water-related natural disasters in developing countries was greater than the total value of all the bilateral and multilateral assistance given to these countries.

101. It was recognized that emergency measures could not be a substitute for pre-disaster planning and disaster prevention, which were two distinct functions that needed to be implemented in order to mitigate the effects of natural disasters. It was pointed out (a) that natural disasters were an important factor of setback to development; (b) that they were mostly preventable; and (c) that the most basic preventive measures were the least expensive. It was stated that pre-planning and preventive approaches should include locating human activity in the least disaster-prone areas, and introducing "vulnerability analysis" into the formulation of development projects. It was also observed that Governments might incorporate programmes of disaster preparedness and prevention into national development and planning, and create national and international consciousness.

102. A number of representatives drew attention to the tragic effects of the recent drought in the Sahel region which, in many instances, had irreversibly affected the ecosystem and induced desertification. While the cyclic drought had been of long duration, it was noted that the dimension of this catastrophe was due in great part to the weakness of the existing socio-economic structure and the lack of a water-related infrastructure capable of responding to the lack of precipitation. It was further noted that, contrary to generally held opinion, the main problem was not one of fundamental lack of water in the region. Assessment studies in fact showed that the potentially available supply, especially in relation to ground water, was quite sizable in so far as foreseeable needs were concerned.

103. While Governments had taken action at the national and regional levels to establish institutes to plan and manage the important water basins in the area, it was recognized that international assistance was necessary to amplify this effort and to develop water resources in such a way as to control and mitigate drought. Such assistance was deemed crucial to the formulation of comprehensive plans for the conjunctive development of ground and surface water on the basis of presently available data. Although international assistance was considered to be fundamental to the setting up of appropriate institutional arrangements at the national and regional levels to ensure proper development and management, it was also recognized that the development of human resources and public participation were among the critical elements in water resources development.

Research, education, training and public information

104. Among the critical constraints identified as impeding efforts toward the rational development and use of water resources, the shortage of skilled scientific, technical and managerial manpower to make the transfer of technology from one country to another more meaningful was frequently stressed, particularly

by representatives of the developing countries. While the latter countries were continuing national efforts to remedy this situation, which was also a serious constraint on development in sectors other than water, they increasingly tended to look to co-operation at the regional and interregional levels for partial solutions and to increased assistance from developed countries in order to attain collective self-sufficiency at all levels. With reference to technical co-operation among developing countries at the regional level, frequent mention was made of the need to promote the exchange of information and experience and to share skills and training resources.

105. In this regard, several representatives drew attention to the priority need to strengthen existing regional training facilities or to establish them where they did not exist. One representative suggested that the Conference might consider the establishment of a subregional institute in the Caribbean to carry out research and interdisciplinary training. Another suggested that the Conference might consider the strengthening of an existing subregional centre in Guatemala. A third suggested the establishment of a water resource development training centre in Africa. Uganda offered to host such an institute. A similar suggestion was made to the effect that the existing national institute in Tanzania be strengthened as a subregional institute. The view was also expressed that training was an area in which United Nations organizations must co-operate to provide regional facilities. Other representatives pointed to the usefulness of regional workshops, seminars and pilot projects, particularly for the exchange of technological information.

106. Representatives of some developed countries and of organizations in the United Nations system expressed agreement on the importance of training and research and indicated the range and type of facilities and programmes, including training programmes, that were available. Several of them stated that a greater number of their water specialists would be made available for assignment in developing countries and that assistance would be provided for suitable technical co-operation projects among developing countries in the training field.

107. In the context of international co-operation, emphasis was given to the need for improving bilateral and multilateral assistance programmes with the developed countries in training and research. One representative stressed the need for co-ordinating research on an international basis in order to avoid duplication and thereby increase the efficiency of research.

108. There was general agreement that at all levels of endeavour, more attention should be given to research since the use and management of water resources must be based on sound factual knowledge. Certain representatives also called attention to the need for an increased research effort aimed at devising new management techniques and technologies for application in the developing countries. It was also stressed that co-operation in the area of research among developing countries was to supplement co-operation between developed and developing nations.

109. In the national context, it was recognized that wide public awareness of and concern for water problems were a prerequisite for public participation in and

support for rational water development and management policies and that greater public information efforts were required to this end. Extensive education of water users was thus needed for the adoption of the most appropriate water-management and conservation techniques.

Regional co-operation

110. The Conference was in agreement that national efforts in relation to the full range of water problems could be considerably strengthened and made more effective through increased regional co-operation. The value of such co-operation had already been demonstrated at the regional meetings convened in preparation for the Conference, the results of which were generally acknowledged as constituting a significant contribution and as forming a sound basis for further action at the regional level. The recommendations made at the regional meetings were generally endorsed by representatives whose countries had participated in their respective meetings. A very widely shared view was that the United Nations regional commissions should be strengthened by providing adequate staffing and other necessary facilities for their water resources activities in order to improve their ability to co-ordinate more effectively the water resource development needs of the region.

111. The importance of regional co-operation was also stressed in relation to promoting the exchange of experience and in the sharing of resources and skills, as well as in the establishment of regional training centres or strengthening of existing ones.

112. Regarding the priority needs created by the lack of adequate water resource development in Africa, support was expressed for the recommendations put forward at the African Regional Preparatory Meeting in 1976 concerning appropriate regional and international co-operative efforts to overcome these problems, particularly in regard to irrigation, development of hydropotential and access to safe drinking water supplies.

Shared water resources 9/

113. Some countries having water resources which they shared with one or more States emphasized the importance of fostering and promoting co-operation among the co-riparian countries. Some also expressed the view that shared water resources should include river and lake basins and common ground-water aquifers and that the solution of problems related to the equitable sharing and optimum utilization of such shared resources could best be resolved through bilateral or multilateral negotiations among the countries involved. These speakers also pointed out that in

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9/ It was agreed in Committee II that the term "shared water resources" had been used only for the purpose of uniformity and did not prejudice the position of countries supporting the terms "transboundary waters" or "international waters". The same definition applies in the current context.

cases where the use of an intermediary body was necessary, the countries concerned must all consent to such an approach.

114. Three international joint commissions reported their experiences in the management of shared water resources - river basins, lake basins and ground-water systems. Some representatives considered it most important to define codes of conduct based on experience obtained in the various cases of international litigation that had been successful in that regard. Such codes of conduct could also be framed in such a manner as to allow proper evolution and should be flexible enough to govern the administration of shared water resources during the various stages of socio-economic as well as political development. The basic principles could include free exchange of information among co-riparian States and development of procedures for joint evaluation of factual information.

115. Some representatives drew attention to the problems of land-locked countries and urged the Conference to take measures so as to enable them to obtain unrestricted transit rights to the sea, as for example via international rivers.

International co-operation

116. The Conference agreed that the main burden of effort in water-resource development must be borne at the national level, while regional co-operation could enhance, and in certain instances was indispensable to the promotion of such national action. At the same time, considerable attention was devoted to the value of international co-operation in promoting rational water management, since international assistance was essentially catalytic and effective only when there was dynamism and vigorous national action. There was general consensus that co-operation at the international level was important when desired programmes required financial or technical resources that far exceeded the capacities of individual countries or groups of countries. Considerable emphasis was placed by developing countries on the critical need for access to the technologies of industrialized nations. Moreover, there was widespread agreement that their experience, often gained from past mistakes, should be made available. As in the case of shortage of trained manpower, the dearth or even absence of technology for the amelioration or solution of specific problems was identified as a major obstacle to rational water development and management. Co-operation between developed and developing countries in the field of technology would therefore be most important in order that general expertise, capabilities in extension and research and, above all, the ability of the developing countries to rely on themselves, could be achieved. It was thought preferable that this co-operation should be without the imposition of political pressure.

117. Still another major constraint to such development was the magnitude of the financial resources required to resolve water problems. A majority of representatives of developing countries pointed out that even a minimal programme to provide safe drinking water to their populations required a level of capital investment far beyond their current or even potential capability for many years to come. In consequence, considerable emphasis was placed on the need for additional financial resources provided either bilaterally or through multilateral programmes.

It was especially stressed by many delegations that such resources were required for the assessment of water resources necessary for development.

118. In this context, a number of proposals were made. While these varied in detail, in general they suggested the establishment of a fund under United Nations auspices to be used specifically for the development of water resources. Although several representatives supported such proposals, many others, in contrast, expressed reservations about the need for a separate fund, some indicating that their Governments were prepared to increase developmental assistance through already-existing bilateral and multilateral funding programmes. The representative of a United Nations organization suggested that a relationship between the United Nations Fund for Population Activities, the United Nations Capital Development Fund, the Fund for Natural Resources Exploration and the United Nations Development Programme might have some relevance in this regard. It was also stressed that the recipient countries themselves were responsible for making effective use of the assistance received.

119. There was general consensus that there was need for better co-ordination of the various activities relating to water within the United Nations system. This subject had acquired particular importance in view of the need to ensure the implementation of the recommendations of the Conference at the national, regional and international levels. However, while there was unanimous agreement on the necessity for effective follow-up, views differed considerably on the institutional means by which this might be accomplished. These differences centred chiefly on whether, at the intersecretariat and intergovernmental levels, new machinery should be created or whether improvement of and simple adjustments to existing machinery and procedures would suffice. Thus, while some representatives favoured the establishment of a new intergovernmental body within the framework of the United Nations system to co-ordinate the activities of the various United Nations bodies dealing with aspects of water resources, others expressed the view that the existing Committee on Natural Resources could best serve the purpose and should be appropriately strengthened.

120. At the secretariat and intersecretariat level, suggestions were put forward for the creation of a new permanent organization to co-ordinate all activities in water resources and development and follow-up of the implementation of the Conference recommendations. Other suggestions favoured the strengthening of existing structures, assigning a central role to the Administrative Committee on Co-ordination. In this regard, the representative of a United Nations organization proposed the establishment of an interagency water resources board whose membership would comprise all organizations with water-related programmes, including the five regional commissions, and which would be served by a small permanent secretariat. The representative of Venezuela stated that the Venezuelan Government would be prepared to act as host for such a secretariat and board and drew attention to a letter on the subject addressed to the President of the Conference (E/CONF.70/21). In a subsequent letter (E/CONF.70/22), this offer was withdrawn in favour of a parallel offer by the Government of Argentina. The Government of Argentina, in its letter of transmission to the President of the Conference (E/CONF.70/23), stated that the offer also allowed for the provision of headquarters for any regional institutional arrangements that might be adopted for Latin America.

Question of the Panama Canal Zone

121. One representative recalled article 16 of the Charter on the Economic Rights and Duties of States and expressed the view that the Conference was a proper forum for bringing to world attention the question of sovereignty in the Panama Canal Zone.

122. The representative of Panama maintained that his country had a sovereign right to be the exclusive beneficiary of the exploitation of its water resources used in the Panama Canal and that the existence of a colonialist situation of that kind limited the optimum planning and development of water resources, as well as the prevention of pollution in Panama. He pointed out that such a case fell within the competence of the Conference, since it did not involve shared international waters but rather internal fresh waters usurped by a foreign nation to the detriment of Panama's sovereign right over the resource. A draft resolution on this subject 10/ was being submitted to the Conference.

123. The representative of the United States of America, in exercising the right of reply, said she regretted that the delegation of Panama had chosen to suggest that the Conference should address itself to issues relating to the Panama Canal Zone, which constituted a bilateral matter between the Governments of the United States and Panama. Negotiations were being conducted by the two countries on the basis of eight principles agreed to by the Foreign Minister of Panama and the Secretary of State of the United States. The question was too complex for real discussion in a multilateral forum. The representative of Panama should reconsider his intention to discuss the Canal Zone at the present time. The United States hoped for a rapid conclusion of a treaty favourable and just to both sides.

10/ Sponsored by Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Democratic People's Republic of Korea, Dominican Republic, Ecuador, El Salvador, Honduras, Libyan Arab Jamahiriya, Mexico, Panama, Paraguay, Peru, Uruguay and Venezuela (E/CONF.70/L.3). For action by the Conference on this draft resolution, see chap. VII, paras. 213-215.

Chapter VI

REPORTS OF THE SESSIONAL BODIES AND ACTION IN PLENARY

A. Committee I

Committee report

124. At its 2nd meeting on 14 March 1977, the Conference allocated to Committee I the following subject-matters contained in items 10 and 11 of its agenda:

Assessment of water resources

Water use and efficiency:

Measurement and projections of water demand

Efficiency in distribution and regulation

Agricultural water use

Industrial water use

Community water supply and waste disposal

Hydroelectric power generation

Inland navigation and other uses

Environment and health:

Environment and health

Pollution

125. The Committee considered these matters at its 2nd to 13th meetings from 15 to 22 March 1977.

126. For the consideration of these topics, the Committee had before it the following documents:

(a) Consolidated action recommendations: Note by the Secretary-General (E/CONF.70/9);

(b) Overview of thematic papers for the United Nations Water Conference (E/CONF.70/10 and Corr.1);

(c) Water for agriculture (E/CONF.70/11);

(d) Assessment of water resources: networks, surveys, services and related facilities; present status and requirements by 2000 (E/CONF.70/13);

(e) Report on community water supplies (E/CONF.70/14);

(f) Guide to sources of recommendations: Note by the secretariat of the Conference (E/CONF.70/15 and Corr.1).

127. At its 2nd meeting on 15 March 1977, the Committee decided to proceed to the consideration of the subject-matters referred to it on the basis of the "Consolidated action recommendations" (E/CONF.70/9), which were derived from the reports of the regional preparatory meetings for the Conference and took account of the review and comments by the Committee on Natural Resources acting as preparatory committee for the Conference, as well as of the "Overview of thematic papers for the United Nations Water Conference" (E/CONF.70/10), which was prepared by the secretariat of the United Nations Water Conference and subsequently reviewed, revised and endorsed by the ad hoc intergovernmental working group convened by the Secretary-General of the Conference at United Nations Headquarters from 6 to 10 December 1976. The Committee also considered two documents entitled respectively "Water for agriculture" (E/CONF.70/11) and "Report on community water supplies" (E/CONF.70/14).

128. Various amendments were submitted orally and in writing 11/ to the consolidated action recommendations. Having considered these submissions, the Committee approved the recommendations contained in documents E/CONF.70/L.4/Add.1-4 for transmission to the plenary. The approved recommendations, though based on relevant parts of documents E/CONF.70/9 and E/CONF.70/10, were renumbered in order to simplify their presentation and for orderly consideration in plenary. It was the understanding of the Committee that the recommendations submitted by Committees I and II would, after their adoption by the Conference, be combined in a single text.

129. The Committee also considered the following draft resolutions and oral and written amendments thereto:

Symbol	Title	Sponsors
E/CONF.70/C.1/L.4 and Rev.1	Research and development of industrial technologies	Argentina, France, Iran, Uruguay and Venezuela
E/CONF.70/C.1/L.11	Water resources assessment	Canada, Finland, Ghana, Guatemala, Iran, Norway, Sweden and Uruguay

11/ E/CONF.70/C.1/L.1-3, 5-8, 10, 13-17.

Symbol	Title	Sponsors
E/CONF.70/C.1/L.12	Community water supply	Argentina
E/CONF.70/C.1/L.18	Amendment proposed to the draft resolution in document E/CONF.70/C.1/L.12	Netherlands

Having considered these texts, the Committee approved the draft resolutions contained in document E/CONF.70/L.4/Add.5 for transmission to the plenary.

130. In addition, at its 13th meeting, on the proposal of the Chairman, the Committee decided to recommend to the Conference for adoption a further resolution entitled "Agricultural water use" which was considered and revised by the Committee during its examination of the proposals made in the document "Water for agriculture" (E/CONF.70/11). The text of this draft resolution is also given in document E/CONF.70/L.4/Add.5.

Action in plenary

131. At the 15th meeting on 24 March 1977, the Rapporteur of Committee I introduced the Committee's report (E/CONF.70/L.4) and the addenda thereto (E/CONF.70/L.4/Add.1-5), in which the Committee transmitted to the Conference for adoption three sets of draft action recommendations and four draft resolutions pertinent to the subject-matters referred to it by the Conference under agenda items 10 and 11. At the same time, the Rapporteur drew attention to certain corrections that should be made to the text of the Committee's report and addenda thereto.

132. The Conference took note of the report of Committee I.

Draft recommendations

133. The draft recommendations on assessment of water resources (E/CONF.70/L.4/Add.1) were adopted without a vote.

134. The Conference considered the draft recommendations on water use and efficiency (E/CONF.70/L.4/Add.2 and 3). Oral amendments were proposed and adopted without a vote in respect of paragraphs B.1, fourth sentence; B.9 (c); B.15, last sentence; B.19 (a); and B.23 (a). (For the corresponding paragraph numbers in the final report, see part one, chap. I, paras. 5, 19 (c), 15, 29 (a) and 33 (i) respectively.)

135. The representative of the United States of America proposed inclusion in paragraph B.19 of a new subparagraph (k), to read as follows:

"(k) Evaluate carefully and take into account the environmental costs

of hydropower projects, including increase of disease transmission and loss of agricultural and forestry potentials."

After some discussion, the representative of the United States of America withdrew the oral amendment, on the understanding that the concern of her delegation that such a concept be taken into consideration would be recorded in the report.

136. The draft recommendations on water use and efficiency, as amended, were adopted without a vote.

137. The Conference considered the draft recommendations on environment, health and pollution control (E/CONF.70/L.4/Add.4). An oral amendment to paragraph C.6 (g) was proposed and adopted without a vote. (For the corresponding paragraph number in the final report, see part one, chap. I, para. 39 (g).)

138. The draft recommendations on environment, health and pollution control, as amended, were adopted without a vote.

139. For the text of the above recommendations, see part one, chapter I, paragraphs 1-40.

Draft resolutions

140. The draft resolutions entitled: "I. Community water supply"; "II. Agricultural water use"; "III. Research and development of industrial technologies"; and "IV. Water resources assessment" (E/CONF.70/L.4/Add.5) were adopted without a vote.

141. For the text of the resolutions as subsequently renumbered, see part one, chapter I, resolutions II, III, IV and I respectively.

B. Committee II

Committee report

142. At its 2nd meeting on 14 March 1977, the Conference allocated to Committee II the following subject-matters contained in items 10 and 11 of its agenda:

Planning, management and institutional aspects:

National water policy

Institutional arrangements

Legislation

Public participation

Instruments to improve the efficiency of water use

Development and application of appropriate technologies

Flood loss management

Drought loss management

Education, training and research:

Education and training

Research needs

Regional co-operation:

Development of shared water resources

Specific regional recommendations

International co-operation:

International technical and advisory services

International research programme

Financing arrangements for water development

Co-ordination of United Nations programmes for implementation of action proposals

143. The Committee considered these matters at its 2nd to 15th meetings from 15 to 23 March 1977.

144. For the consideration of these topics the Committee had before it the following documents:

(a) Report of the ESCAP regional preparatory meeting for the United Nations Water Conference (E/CONF.70/4);

(b) Report of the regional preparatory meeting of the countries of Latin America and the Caribbean for the United Nations Water Conference (E/CONF.70/5);

(c) Economic Commission for Europe: regional report (E/CONF.70/6);

(d) Economic Commission for Africa: regional report (E/CONF.70/7);

(e) Report of the Economic Commission for Western Asia: regional preparatory meeting for the United Nations Water Conference (E/CONF.70/8);

(f) Consolidated action recommendations: Note by the Secretary-General (E/CONF.70/9);

(g) Overview of thematic papers for the United Nations Water Conference (E/CONF.70/10 and Corr.1);

(h) Technical co-operation among developing countries with regard to water resources development (E/CONF.70/12);

(i) Report on community water supplies (E/CONF.70/14);

(j) Guide to sources of recommendations: Note by the secretariat of the Conference (E/CONF.70/15 and Corr.1).

145. At its 2nd meeting on 15 March 1977 the Committee decided to proceed to the consideration of the subject-matters referred to it on the basis of the "Consolidated action recommendations" (E/CONF.70/9) which were derived from the reports of the regional preparatory meetings for the Conference and took account of the review and comments by the Committee on Natural Resources acting as preparatory committee for the Conference.

146. Various amendments were submitted orally and in writing 12/ to the consolidated action recommendations. Having considered these submissions, the Committee approved the recommendations contained in documents E/CONF.70/L.5/Add.1-4 for transmission to the plenary. The approved recommendations, though based on relevant parts of document E/CONF.70/9, were renumbered in order to simplify their presentation and for orderly consideration in plenary. It was the understanding of the Committee that the recommendations submitted by Committees I and II would, after their adoption by the Conference, be combined in a single text.

147. The Committee also considered the following draft resolutions and oral and written amendments thereto:

Symbol	Title	Sponsors
E/CONF.70/C.2/L.7 and Rev.1	Technical co-operation among developing countries	Jamaica and Pakistan
E/CONF.70/C.2/L.9	River commissions	Mauritania, Nigeria, Senegal, Sudan and Thailand

12/ E/CONF.70/C.2/L.1, 3, 6 and Rev.1, 12.

Symbol	Title	Sponsors
E/CONF.70/C.2/L.10	Water policies in the occupied territories	Afghanistan, Algeria, Angola, Bahrain, Bangladesh, Benin, Burundi, Cuba, Democratic People's Republic of Korea, Democratic Yemen, Egypt, Ghana, India, Iraq, Kuwait, Libyan Arab Republic, Madagascar, Mauritania, Morocco, Nigeria, Oman, Pakistan, Panama, Qatar, Saudi Arabia, Senegal, Sri Lanka, Sudan, Syrian Arab Republic, Tunisia, Uganda, United Arab Emirates, Yemen, Yugoslavia and Zambia
E/CONF.70/C.2/L.11	Role of water in combating desertification	Ethiopia, Kenya, Libyan Arab Republic, Niger, Nigeria, Mali and Sudan
E/CONF.70/C.2/L.13	Institutional arrangements for international co-operation in the water sector	Chairman of the Contact Group
E/CONF.70/C.2/L.14 and Rev.1	Financing arrangements for international co-operation in the water sector	Chairman of the Contact Group

Having considered these texts, the Committee approved the draft resolutions contained in document E/CONF.70/L.5/Add.5 for transmission to the plenary.

148. All the draft resolutions but one were adopted by the Committee without a vote. The draft resolution entitled "Water policies in the occupied territories" was adopted by a roll-call vote of 55 in favour to 7 against with 27 abstentions.

149. Statements in explanation of vote before the vote were made by the representatives of Zambia, Israel, German Democratic Republic (also on behalf of Byelorussian Soviet Socialist Republic, Bulgaria, Czechoslovakia, Hungary, Mongolia, Poland, Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics), Burundi, Democratic Yemen, Democratic People's Republic of Korea, Greece, Romania, Syrian Arab Republic, Cuba, United Arab Emirates, Yugoslavia, Ghana, Cyprus, Federal Republic of Germany, Tunisia, Oman, Turkey and Canada.

150. The voting was as follows:

In favour: Afghanistan, Bahrain, Bangladesh, Benin, Bolivia, Botswana, Burundi, Chad, Cuba, Cyprus, Czechoslovakia, Democratic People's Republic of Korea, Democratic Yemen, Egypt, Ethiopia, German Democratic Republic, Ghana, Greece, Hungary, India, Indonesia, Iraq, Ivory Coast, Kuwait, Lesotho, Liberia, Libyan Arab Republic, Malaysia, Mauritania, Mongolia, Morocco, Nepal, Niger, Nigeria, Oman, Pakistan, Philippines, Poland, Romania, Saudia Arabia, Senegal, Sierra Leone, Spain, Sudan, Syrian Arab Republic, Tunisia, Turkey, Ukrainian Soviet Socialist Republic, Union of Soviet Socialist Republics, United Arab Emirates, United Republic of Tanzania, Venezuela, Yugoslavia, Zaire, Zambia.

Against: Canada, Costa Rica, Germany, Federal Republic of, Israel, Netherlands, United Kingdom, United States of America.

Abstaining: Argentina, Australia, Austria, Belgium, Brazil, Central African Empire, Colombia, Denmark, Finland, France, Guatemala, Holy See, Honduras, Italy, Japan, Mexico, New Zealand, Norway, Paraguay, Peru, Portugal, Republic of Korea, Swaziland, Sweden, Switzerland, Thailand, Uruguay.

151. Statements in explanation of vote after the vote were made by the representatives of Argentina, Japan, Colombia, Canada, Ivory Coast, Mexico, United States of America, Nepal.

152. The representative of Iran, absent during the voting, expressed his wish to associate himself with those delegations voting in favour of the draft resolution.

153. Though the draft resolution on financing arrangements for international co-operation in the water sector (E/CONF.70/C.2/L.14) was adopted without a vote, a number of delegations stated that they would have preferred that in operative paragraph 1, the increasing flow of financial resources should be achieved through redistribution of such resources within the United Nations system.

154. With regard to implementation of the plan of action referred to in the draft resolution, some delegations proposed that it be carried out, inter alia, through periodic reports that would include a review of measures taken or envisaged by Governments, as envisaged in document E/CONF.70/9, paragraph 109 (b). Several delegations stated that paragraph 109 (b) was covered by the resolution on institutional arrangements. The proposal was then withdrawn.

Action in plenary

155. At the 16th meeting on 25 March 1977, the Rapporteur of Committee II introduced the Committee's report (E/CONF.70/L.5) and the addenda thereto (E/CONF.70/L.5/Add.1-5), in which the Committee transmitted to the Conference for adoption five sets of draft action recommendations and six draft resolutions pertinent to the subject-matters referred to it by the Conference under agenda items 10 and 11. At the same time, the Rapporteur drew attention to certain corrections that should be made to the text of the Committee's report and the addenda thereto, notably deletion of draft resolution I, the substance of which had been incorporated in the annex to the recommendations on regional co-operation (see part one, chap. I, para. 88 and chap. I, annex), and the consequential renumbering of the other draft resolutions.

156. The Conference took note of the report of Committee II.

Draft recommendations

157. The Conference considered the draft recommendations on policy, planning and management (E/CONF.70/L.5/Add.1 and 3). Oral amendments were proposed and adopted without a vote in respect of paragraphs B.9, penultimate sentence; and B.10 (e). (For the corresponding paragraph numbers in the final report, see part one, chap. I, paras. 50 and 51 (e).)

158. The draft recommendations on policy, planning and management, as amended, were adopted without a vote.

159. The Conference considered the draft recommendations on public information, education, training and research (E/CONF.70/L.5/Add.2 and 3). An oral amendment was proposed and adopted without a vote in respect of the recommendation concerning an international research programme (E/CONF.70/L.5/Add.3, para. 102 (f)). (For the corresponding paragraph number in the final report, see part one, chap. I, para. 83 (vi).)

160. The draft recommendations on public information, education, training and research, as amended, were adopted without a vote.

161. The draft recommendations on natural hazards (E/CONF.70/L.5/Add.3) were adopted without a vote.

162. The Conference considered the draft recommendations on regional co-operation (E/CONF.70/L.5/Add.3). On request, the text of paragraph 3 (g), concerning the development of shared water resources, was put to the vote by roll-call. The text was adopted by 29 votes to 13, with 48 abstentions. The voting was as follows:

In favour: Argentina, Bahrain, Bangladesh, Burundi, Canada, Democratic People's Republic of Korea, Haiti, Iran, Iraq, Kenya, Liberia, Mexico, Netherlands, Niger, Norway, Oman, Pakistan, Panama, Sudan, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Tunisia, United Republic of Tanzania, United States of America, Venezuela, Yemen, Yugoslavia.

Against: Afghanistan, Angola, Bolivia, Brazil, Colombia, Ecuador, Ethiopia, Honduras, India, Nepal, Paraguay, Thailand, Turkey.

Abstaining: Algeria, Australia, Austria, Belgium, Byelorussian Soviet Socialist Republic, Chile, Cuba, Democratic Yemen, Dem[illegible] Salvador, Finland, France, German Democratic Republic, Germany, Federal [illegible] of, [illegible]hana, Greece, Guatemala, Hungary, Indonesia, Israel, Italy, Ivor[illegible], Japan, Kuwait, Lesotho, Libyan Arab Republic, Malaysia, Mauritani[illegible]land, Peru, Philippines, Poland, Portugal, Republic of Korea, [illegible] Arabia, Spain, Sri Lanka, Trinidad and Tobago, Ukrainian [illegible]blic, Union of Soviet Socialist Republics, United Arab Emirat[illegible] Great Britain and Northern Ireland, Uruguay.

163. The remaining paragraphs of the draft recommendations on regional co-operation as corrected were adopted without a vote.

164. The representative of Ethiopia made a statement in explanation of vote.

165. The Conference considered the draft recommendations on international co-operation (E/CONF.70/L.5/Add.4). An oral amendment to paragraph 8, second sentence, was proposed and adopted without a vote. (For the corresponding paragraph number in the final report, see part one, chap. I. para. 92.)

166. The draft recommendations on international co-operation, as amended, were adopted without a vote.

167. Certain representatives made statements concerning the recommendations just adopted, the substance of which they requested should be recorded in the report of the Conference.

168. The representative of Turkey stated that while his delegation endorsed the principle of co-operation between riparian countries on matters pertaining to transboundary water resources, such co-operation, in its view, could be based only on the concept of sovereignty and carried out exclusively through mutual consent and agreement. No adequately crystallized and undisputed legal rules and principles applicable to the utilization, management and development of transboundary water resources existed at present, and even the terms in use, such as "shared water resources", were controversial. The International Law Commission was continuing its work on the codification of the law of the non-navigational uses of international watercourses. The recommendations adopted by the Conference could not prejudice in any way the work of the International Law Commission, nor could they be considered as having in the interim any legal significance. For that reason, the Turkish delegation reserved its position on the recommendations concerning the development of shared water resources, both regionally and internationally, contained in paragraphs 1-3 of document E/CONF.70/L.5/Add.3 and paragraphs 6-12 of document E/CONF.70/L.5/Add.4, to the extent that these did not correspond to the views outlined above. (For the corresponding paragraph numbers in the final report, see part one, chap. I, paras. 84-86, 90-92, 93 (a)-(f), 87 and 93 (g).)

169. The representative of Romania stated that with regard to transboundary water resources, his delegation adhered to the principle that bilateral, subregional or regional agreements among the countries directly interested continued to provide the most suitable basis for the resolution of problems concerning individual transboundary water resources and for the preparation of certain generally acceptable principles or rules in the sector of shared water resources.

170. The representative of Nepal stated that his delegation reserved its position concerning certain recommendations on regional and international co-operation in the development of shared water resources, particularly as expressed in paragraph 3 (g) of document E/CONF.70/L.5/Add.3 and paragraph 7 of document E/CONF.70/L.5/Add.4. (For the corresponding paragraph numbers in the final report, see part one, chap. I, paras. 86 (g) and 91.)

171. In a letter addressed to the President of the Conference (E/CONF.70/27), the representative of Israel requested that the report of the Conference should reflect his delegation's view that groupings of States within a designated geographical region that were not open to full membership and full participation by all States situated within that region could not claim and should not be granted the status and prerogatives of a regional organization within any United Nations framework. The delegation of Israel accordingly reserved its position with regard to any recommendations adopted by the Conference which were not in conformity with that principle.

172. For the text of the above recommendations, see part one, chapter I, paragraphs 41-103.

Draft resolutions

173. The Conference had before it six draft resolutions entitled:

"I. Technical co-operation among developing countries in the water sector";

"II. River commissions";

"III. Water policies in the occupied territories";

"IV. Role of water in combating desertification";

"V. Institutional arrangements for international co-operation in the water sector"; and

"VI. Financing arrangements for international co-operation in the water sector" (E/CONF.70/L.5/Add.5).

174. Draft resolutions I and II were adopted without a vote. For the text see part one, chapter I, resolutions VI and VII respectively.

175. On request, the text of draft resolution III was put to the vote by roll-call. The draft resolution was adopted by 52 votes to 17, with 22 abstentions. For the text see part one, chapter I, resolution X.

176. The representative of Israel made a statement in explanation of vote before voting had commenced.

177. The voting was as follows:

In favour: Afghanistan, Algeria, Angola, Bahrain, Bangladesh, Bhutan, Burundi, Cuba, Democratic People's Republic of Korea, Democratic Yemen, Ecuador, Ethiopia, German Democratic Republic, Ghana, Greece, Hungary, India, Indonesia, Iran, Iraq, Jamaica, Kenya, Kuwait, Lesotho, Liberia, Libyan Arab Republic, Malaysia, Mauritania, Mongolia, Nepal, Niger, Oman, Pakistan, Panama, Poland, Romania, Saudi Arabia, Spain, Sri Lanka, Sudan, Syrian Arab Republic, Trinidad and Tobago,

Tunisia, Turkey, Uganda, Ukrainian Soviet Socialist Republic, Union of Soviet Socialist Republics, United Arab Emirates, United Republic of Tanzania, Venezuela, Yemen, Yugoslavia.

Against: Australia, Belgium, Canada, Costa Rica, Denmark, El Salvador, France, Germany, Federal Republic of, Guatemala, Haiti, Israel, Italy, Netherlands, New Zealand, Norway, United Kingdom of Great Britain and Northern Ireland, United States of America.

Abstaining: Argentina, Austria, Bolivia, Brazil, Byelorussian Soviet Socialist Republic, 13/ Chile, Colombia, Finland, Honduras, Ivory Coast, Japan, Mexico, Paraguay, Peru, Portugal, Republic of Korea, Samoa, Swaziland, Sweden, Switzerland, Thailand, Uruguay.

178. Certain representatives made statements in explanation of vote, the substance of which they requested should be recorded in the report of the Conference.

179. The representative of the United Kingdom of Great Britain and Northern Ireland, speaking on behalf of States members of the European Economic Communities present at the Conference, stated that while some of the principles endorsed in resolution III were acceptable to them, they found it regrettable that at the present Conference the issue had been raised in the terms employed in the text. The States members of the European Economic Communities had moreover formally expressed their common reservations in the General Assembly, most recently at its thirty-first session, with regard to the General Assembly resolutions referred to in the preamble to resolution III.

180. The representative of Spain stated that while his delegation had voted in favour of the resolution, it would have preferred to be given the opportunity to express its exact position with respect to operative paragraph 3 through a separate vote on that paragraph, which contained certain terms that had not received the support of the Spanish authorities.

181. The representative of Canada stated that his delegation had voted against resolution III because it introduced political issues that were extraneous to the essential purposes of the United Nations Water Conference.

182. The representative of Nepal stated that his delegation had voted in favour of resolution III because Nepal had consistently been opposed to colonialism, racial discrimination and apartheid, and had always supported the cause of the liberation movements. On the question of Palestine, the position of the Government of Nepal was that while recognizing Israel's right to exist, it had insisted on the withdrawal of Israel from occupied territories. It nevertheless hoped that the resolution just adopted would not prejudge the creation of a future State in the occupied territories.

13/ The representative of the Byelorussian Soviet Socialist Republic subsequently stated that he had intended to vote in favour of the draft resolution.

183. In a written communication addressed to the President of the Conference, the representative of Israel requested inclusion in the report of the Conference of a statement to the effect that his delegation did not support the decisions of the Conference in their entirety, being opposed to the resolution entitled "Water policies in the occupied territories", which violated the Charter of the United Nations and the terms of reference of the Conference.

184. Statements in explanation of vote were also made by the following countries: Austria, Switzerland, Sweden, Argentina, Paraguay, United States of America, Mexico, Norway, Syria, Uruguay and Japan.

185. Draft resolution IV was adopted without a vote. For the text see part one, chapter I, resolution V.

186. The Conference considered draft resolution V, concerning institutional arrangements for international co-operation in the water sector. The representatives of Argentina and Sudan submitted separate oral amendments to the operative part of the draft resolution. After discussion of the proposed amendments as well as of a number of related proposals and suggestions, the Conference decided to maintain the text prepared by the Committee and the two proposed amendments were accordingly withdrawn. The representative of Argentina stated that he wished to place on record the gratitude of his Government, as the host to the Conference, for the work performed by the Centre for Natural Resources, Energy and Transport in the preparations for the Conference.

187. A correction to subparagraph (2) of the operative paragraph was noted by the Conference.

188. Draft resolution V, as corrected, was adopted without a vote. (For the corresponding paragraph number in the final report, see part one, chap. I, resolution VIII, subpara. (b).)

189. In considering draft resolution VI as corrected by the Rapporteur of Committee II, concerning financing arrangements for international co-operation in the water sector, the Conference had before it draft amendments (E/CONF.70/L.7) submitted by Burundi, Chad, Ivory Coast, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, Sudan, Tunisia, United Republic of Tanzania, and Zaire proposing modification of operative paragraphs 1 and 2 (ii) of draft resolution VI. (For the corresponding paragraph numbers in the final report, see part one, chap. I, resolution IX, paras. 1 and 2 (b).)

190. In introducing the draft amendments, the representative of Burundi stated that the proposals were: (a) to amend the beginning of operative paragraph 1 so as to read:

> "on the basis of consultations with Governments and United Nations organizations, to prepare a feasibility study for the establishment of a water resources development and management fund with a view to increasing ... ";

and (b) in operative paragraph 2 (ii), to insert the word "subregional", between the words "bilateral" and "regional".

191. The sponsors of the draft amendment agreed in the course of the discussion to revise their draft amendment to operative paragraph 1 to read as follows:

> "Requests the Secretary-General to prepare, on the basis of consultations with Governments and competent organizations within the United Nations system, a study of the most effective and flexible mechanisms to increase ...".

192. The revised amendment to operative paragraph 1 was adopted without a vote.

193. The amendment to operative paragraph 2 (ii) was adopted without a vote.

194. Draft resolution VI, as amended, was adopted without a vote. (For the final text, see part one, chap. I, resolution IX.)

195. The representatives of the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics stated that as the wording of operative paragraph 1 had not fully taken their position into account, the report should reflect their desire to have had included, after the words "competent organizations within the United Nations system" the phrase "and on the basis of allocations within the limits of the resources of the United Nations".

196. The representative of Mauritania requested inclusion in the report of his delegation's position that the omission of any reference to a fund in operative paragraph 1 should not be interpreted as prejudging the establishment of a fund, whether voluntary or not, should this prove necessary.

197. The representative of the United States of America expressed pleasure that the Conference had achieved consensus on institutional and financing arrangements in the water sector, as reflected in the wording of resolutions V and VI just adopted. In such cases there was always some distance between what a particular delegation wished to see reflected in a resolution and what was acceptable to the participants as a whole. In that context, the United States delegation wished to state for inclusion in the report that while supporting increased efforts through bilateral and multilateral assistance organizations and programmes to further water resources development, it believed that the terms and conditions of such endeavours should be consistent with the over-all terms and conditions that the institutions might establish based on their standard operating criteria.

198. The representative of the Federal Republic of Germany expressed satisfaction at the consensus achieved by the Conference on the draft resolutions it had considered, especially resolutions V and VI. His delegation's support for resolution V was based on the understanding that the current efforts to reach a higher degree of efficiency in the Secretariat would be continued and that additional administrative costs would be avoided through increased rationalization. Adoption of resolution VI was one of the major achievements of the Conference, and the Government of the Federal Republic of Germany would co-operate fully in helping the Secretary-General to prepare the report called for. In carrying out this task,

the Secretary-General should make sure that any financial arrangements envisaged should allow for the free choice of priorities by the individual developing countries.

199. The representative of Afghanistan requested that the report reflect his delegation's position with regard to certain decisions of the Conference, notably on the question of developing shared water resources, which in the opinion of his delegation contradicted the principle of the permanent sovereignty of States over their natural resources and also failed to take into consideration co-operation based on direct agreement between the countries concerned. Furthermore, some of the assertions made under "international co-operation" seemed to prejudge the work of the International Law Commission on the codification and progressive development of the law of the non-navigable uses of international watercourses. For the same reasons, the delegation of Afghanistan reserved its position with regard to the concepts expressed in the resolution entitled "River Commissions".

200. The representative of the German Democratic Republic, speaking on behalf of the delegations of the Byelorussian Soviet Socialist Republic, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Mongolia, Poland, Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics, requested inclusion in the report of the following statement on some basic questions of the work of the United Nations Water Conference.

201. Those socialist countries had always favoured the active development of international co-operation, first of all with developing countries, on the basis of equitable, equal and mutual advantages in relations between countries in the interests of international peace and détente. They supported all delegations which held that questions concerning the utilization of water resources were of vital significance to the socio-economic development of all countries and peoples. The problems related to the utilization of water resources shared by two or more countries should be settled by such countries by means of negotiations on the basis of mutual respect for the sovereignty and rights of the States concerned. The same socialist countries had consistently given assistance to the developing countries and would continue to do so, with priority attention to bilateral arrangements that yielded the most positive results for the countries concerned. They supported and actively participated in the implementation of United Nations programmes of assistance to developing countries and in that connexion called for the more effective utilization of the regular budget of the United Nations and for improved co-ordination among all bodies of the Organization.

202. The socialist countries enumerated had made voluntary financial contributions to the various United Nations funds that could best be utilized for the resolution of water problems. They were actively participating, together with the developing countries, in the work of the Ad Hoc Committee on the Restructuring of the Economic and Social Sectors of the United Nations System, for the purpose of achieving a more effective and fuller utilization of all possibilities in the field of economic co-operation on an equal footing. The socialist countries supported enhancement of the role of the regional commissions in solving important tasks of co-operation in the field of water resources and in that context they also took the view that the role of the Economic and Social Council and the Committee on

Natural Resources in the implementation of these tasks must be further strengthened. The position of the socialist countries with regard to the creation of new funds had been repeatedly explained. They did not oppose the establishment of funds on a voluntary basis and were in favour of a more effective utilization of existing means without increasing the regular budget of the United Nations. They believed that the results of the United Nations Water Conference would play a positive part in solving the problems under consideration and were confident that those results would give fresh impetus to the advancement of equal co-operation among all peoples.

203. The socialist countries enumerated wished to reserve their position concerning use of the term "developed countries" in the documents before the Conference, since its use was not in accordance with well-established United Nations practice.

C. Credentials Committee

Committee report

204. At its 2nd meeting on 14 March 1977, the Conference, in accordance with rule 4 of its rules of procedure, appointed a Credentials Committee composed of the following States: Ecuador, El Salvador, Ivory Coast, Malaysia, Nepal, Netherlands, Union of Soviet Socialist Republics, United States of America, Zambia.

205. The Credentials Committee held one meeting on 21 March 1977. Mr. Konau Adou (Ivory Coast) was unanimously elected Chairman.

206. The Committee noted from memoranda submitted to it by the Secretary-General of the Conference that as at 21 March 1977:

(a) Credentials issued by the Head of State or Government or the Minister for Foreign Affairs had been submitted, as provided for in rule 3 of the rules of procedure of the Conference, by 95 States participating in the Conference:

(b) The credentials of the representatives of eight States were communicated to the Secretary-General of the Conference in the form of cables from their respective Heads of State or Government or Ministers for Foreign Affairs;

(c) The representatives of nine States were designated in letters or notes verbales from their respective permanent representatives or permanent missions in New York, or from their embassies in Buenos Aires;

(d) The representatives of one State were designated by a Government Ministry other than the Ministry of Foreign Affairs;

(e) In respect of three States participating in the Conference, no communication regarding the designation of their representatives had been received, but the Secretary-General of the Conference had been informed that proper credentials for these representatives had been dispatched.

207. On the proposal of the Chairman, the Committee agreed that, as an exceptional measure, in view of the short duration of the Conference and taking into account rule 5 of the rules of procedure of the Conference, the communications referred to in subparagraphs (b), (c) and (d) of paragraph 206 above should be accepted provisionally, pending the receipt of the formal credentials of the representatives concerned. The Committee noted that in most instances assurances had been given that proper credentials would be transmitted as soon as possible. Furthermore, in respect of the representatives referred to in subparagraph (e) above, the Committee agreed that they should also be entitled to participate provisionally in the Conference, it being understood that their credentials had already been dispatched. The Committee also authorized its Chairman to report directly to the Conference in the event that, in the time intervening between the meeting of the Credentials Committee and consideration by the plenary of the Committee's report, further credentials were received.

208. Upon the proposal of the Chairman, the Committee thereupon decided to submit this report for the approval of the Conference.

Action in plenary

209. At its 15th meeting on 24 March 1977, the Conference approved the report of the Credentials Committee (E/CONF.70/L.6), as orally amended by the Secretariat.

210. The representative of the Libyan Arab Republic and the representative of Israel made statements. Both requested that their statements be included in the report of the Conference.

211. The representative of the Libyan Arab Republic, speaking on behalf of the League of Arab States, stated that their acceptance of the Credential Committee's report in no way meant that they accepted the credentials issued by the Zionist entity which had been created without the consent of the Palestinian people who, in fact, had been expelled from their rightful homeland.

212. The representative of Israel stated there could be no doubt about the right of Israel, a State the foundation of which was approved by the United Nations, to be represented at the Conference. On the contrary, the presence there of the Palestine Liberation Organization and of the League of Arab States, organizations which threatened the existence of Israel, should be questioned.

Chapter VII

ACTION BY THE CONFERENCE ON DRAFT RESOLUTIONS SUBMITTED DIRECTLY TO THE PLENARY

213. At the 14th plenary meeting on 23 March 1977, the representative of Panama introduced on behalf of the delegations of Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Democratic People's Republic of Korea, Dominican Republic, Ecuador, El Salvador, Honduras, Libyan Arab Republic, Mexico, Panama, Paraguay, Peru, Uruguay and Venezuela, a draft resolution entitled "Panama Canal Zone" (E/CONF.70/L.3).

214. The representative of the United States of America requested that the report reflect her delegation's concern about the propriety of raising at the Conference issues that were being considered in the ongoing bilateral negotiations for a new Canal treaty. Those negotiations were being conducted in accordance with the joint statement of principles of 7 February 1974 which had been reaffirmed by the two Governments as recently as 31 January 1977. It could therefore only be assumed that Panama intended the resolution to reflect those principles, which the United States delegation fully supported. As she had already stated during the general debate, the question of the use of lands and waters under a new treaty relationship was too complex to be discussed in the present forum. The United States Government had worked closely with the Government of the Republic of Panama in the past to promote the development of water resources in the areas surrounding the cities of Panamá and Colón. The United States fully expected to continue that co-operation in the future under a new treaty which would return the Canal Zone to Panamanian jurisdiction.

215. The Conference adopted the draft resolution without a vote. For the text see part one, chapter II, resolution XI.

216. At the 16th plenary meeting on 25 March 1977, the Conference considered a draft resolution (E/CONF.70/L.8) entitled "Plan of Action of Mar del Plata" submitted by the Chairman of a contact group set up by the Conference at its 15th meeting on 24 March 1977. The draft resolution was intended to serve as an introductory text to the recommendations and resolutions adopted by the Conference on the reports of Committees I and II.

217. The representative of Sri Lanka proposed, and the Conference agreed, that the title in English should be amended to read "Mar del Plata Action Plan". The draft resolution was adopted without a vote. For the text, see part one, chapter I.

218. At the 16th meeting on 25 March 1977, the representative of India, acting on behalf of all governmental participants in the Conference, introduced a draft resolution entitled "Expression of thanks to the host country".

219. The Conference adopted the draft resolution by acclamation. For the text, see part one, chapter II, resolution XII.

Chapter VIII

ADOPTION OF THE REPORT OF THE CONFERENCE

220. The draft report of the Conference was considered at the 15th and 16th meetings on 24 and 25 March 1977. In introducing the draft report, the Rapporteur-General recalled that it had been the understanding of Committees I and II that the draft recommendations and resolutions that those Committees had transmitted to the Conference would, after their adoption, be combined into a unified text. In accordance with the outline of the draft report, as submitted by the Rapporteur-General to the Conference in document E/CONF.70/L.2/Add.4, the final report would consist of the decisions of the Conference (part one); an account of the background to the Conference (part two); a summary of the proceedings of the Conference, subdivided into chapters covering the attendance and organization of work; a summary of the general debate; the reports of the sessional bodies and action taken in plenary; adoption of the report of the Conference; concluding statements (part three); and such annexes as might be required.

221. At its 16th and last meeting the Conference adopted the report as a whole, having authorized the Rapporteur-General to make amendments in line with comments made by delegations during the plenary discussion. The Rapporteur-General was also authorized to complete the text in the light of the action taken at the 15th and 16th meetings and to make the necessary editorial changes in accordance with accepted United Nations practice.

Chapter IX

CONCLUDING STATEMENTS

222. The representative of the International Peace Academy made a statement on behalf of the non-governmental organizations attending the Conference.

223. The representatives of Sudan, Iran, the German Democratic Republic, the Netherlands and Jamaica, speaking on behalf of the States in their respective regional groups, paid tribute to the President of the Conference for the manner in which he had guided its work and warmly thanked the people and Government of Argentina for the generous hospitality with which they had welcomed the delegations to the Conference.

224. The Secretary-General of the Conference, in his concluding remarks, observed that the Conference had not only responded effectively to the water-related recommendations of the United Nations conferences on food and human settlements: it had also generated important inputs for the forthcoming United Nations conferences on desertification, technical co-operation among developing countries, and science and technology for development. The Conference had resulted in a new awareness of global water problems and concurrently a renewed consciousness of the need for unified action had been created and a fresh commitment made for continued activity in the solution of these problems.

225. It was understandable that differing views had been put forward concerning problems related to such important matters as appropriate institutional arrangements, the mobilizing of financial resources, and shared water resources. At the same time, it was to be welcomed that the diverse opinions on these problems had been synthesized in such a way as to facilitate their resolution within the framework of the United Nations system. The spirit of conciliation and co-operation that had characterized the work of the Conference should now be translated into effective and sustained follow-up activity. Toward that goal, it was imperative that Governments and the competent national committees should mobilize their resources so as to implement and publicize widely the decisions taken by the Water Conference. To be effective, the necessary follow-up would be equally dependent on strengthened co-ordination within the United Nations system as well as improved co-ordination of government policies with the activities of the United Nations and other interested organizations.

226. The President of the Conference, in his concluding statement, noted that the documentation and decisions emanating from the United Nations Water Conference would serve as an invaluable information base for future work by the international community in the water sector. The most important message of the Conference was that the conservation and rational use of water resources was an unavoidable responsibility. In consequence, if wise management of water resources were to receive the attention it warranted internationally, that message must be conveyed to the policy and decision-making levels of Government.

227. The Conference had focused on the economic and social, rather than the political or judicial, aspects of water problems. At the same time, it had

demonstrated that knowledge about water was now sufficiently advanced to permit Governments to improve and finalize pertinent national and international legislation on the subject and in parallel to ameliorate existing domestic institutional structures.

228. It was salutary that the Conference had recognized the force of the need to strengthen the fundamental principle that co-operation was required among States in the resolution of questions relating to water resources utilization. But until that principle had become a reality, the guidelines laid down by the United Nations and other competent bodies on the basis of prevailing circumstances and doctrines would help to provide solutions to current problems. Indeed, the common need could act as a catalytic unifying force, and nowhere was this more true than in the common need for water. There should be recognition that the Water Conference represented a call for reality and understanding and there were grounds for optimism that in the future, problems deriving from water and its uses could be solved on the basis of rational co-operation among all countries concerned.

Annexes

Annex I

LIST OF DOCUMENTS BEFORE THE CONFERENCE

A. Documents in the general series

Symbol	Title	Languages
Basic documents issued before the session		
E/CONF.70/1	Provisional agenda	A E F R S
E/CONF.70/2	Provisional rules of procedure	A E F R S
E/CONF.70/3	Organization of work	A E F R S
E/CONF.70/4	Report of the ESCAP preparatory meeting for the United Nations Water Conference	E F R S
E/CONF.70/5	Report of the regional meeting of the countries of Latin America and the Caribbean for the United Nations Water Conference	E F R S
E/CONF.70/6	Regional report of the Economic Commission for Europe	E F R S
E/CONF.70/7	Regional report of the Economic Commission for Africa	E R S
E/CONF.70/8	Report of the Economic Commission for Western Asia. Regional preparatory meeting for the United Nations Water Conference	A E F R S
E/CONF.70/9	Consolidated action recommendations	A E F R S
E/CONF.70/10 and Corr.1	Overview of thematic papers	A E F R S
E/CONF.70/11	Water for agriculture	A E F R S
E/CONF.70/12	Technical co-operation among developing countries with regard to water resources development	A E F R S
E/CONF.70/13	Assessment of water resources: networks, surveys, services and related facilities; present status and requirements by 2000	A E F R S

Symbol	Title	Languages
Basic documents issued before the session (continued)		
E/CONF.70/14	Report on community water supplies	A E F R S
E/CONF.70/15 and Corr.1	Guide to sources of recommendations	A E F R S
Other documents issued during the session		
E/CONF.70/16	Statement by the Secretary-General of the United Nations Water Conference	A E F R S
E/CONF.70/17	Statement by Mr. Yahia Abdel Mageed, Secretary-General of the United Nations Water Conference before the plenary meeting of the Conference	A E F R S
E/CONF.70/18	Statement by Mr. Gabriel Van Laethem, Under-Secretary-General for Economic and Social Affairs	A E F R S
E/CONF.70/19	Statement by the President of the Argentine Republic opening the United Nations Water Conference	A E F R S
E/CONF.70/20	Statement by Luís Urbano Jáuregui, President of the United Nations Water Conference	A E F R S
E/CONF.70/21	Letter dated 10 March 1977 addressed to the Secretary-General of the Conference by the head of the delegation of Venezuela	A E F R S
E/CONF.70/22	Letter dated 18 March 1977 addressed to the President of the United Nations Water Conference on behalf of the delegation of Venezuela	A E F R S
E/CONF.70/23	Letter dated 21 March 1977 addressed to the President of the United Nations Water Conference by the delegation of Argentina	A E F R S
E/CONF.70/24	Letter dated 22 March 1977 from the heads of delegations of the Byelorussian Soviet Socialist Republic, the People's Republic of Bulgaria, the Czechoslovak Socialist Republic, the German Democratic Republic, the Hungarian People's Republic, the Mongolian People's Republic, the Polish People's Republic, the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics addressed to the President of the Conference	A E F R S

Symbol	Title	Languages
Other documents issued during the session (continued)		
E/CONF.70/25	Letter dated 24 March 1977 addressed to the President of the Conference by the heads of delegations of France, United Kingdom of Great Britain and Northern Ireland and the United States of America	A E F R S
E/CONF.70/26	Letter dated 24 March 1977 addressed to the President of the Conference by the acting head of delegation of the Federal Republic of Germany	A E F R S
E/CONF.70/27	Letter addressed to the President of the Conference by the acting head of the delegation of Israel.	A E F R S
E/CONF.70/28	Statement by the delegations of the Byelorussian Soviet Socialist Republic, the People's Republic of Bulgaria, the Czechoslovak Socialist Republic, the German Democratic Republic, the Hungarian People's Republic, the Mongolian People's Republic, the Polish People's Republic, the Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics on some basic questions of the work of the United Nations Water Conference	A E F R S
Information documents		
E/CONF.70/INF.1 and Add.1	List of documents	E/F/R/S
E/CONF.70/INF.2	List of participants	E/F/S
Principal background documents		
E/CONF.70/CBP/1 and Corr.1	Resources and needs: assessment of the world water situation	A E F R S
E/CONF.70/CBP/2 and Corr.1 (Arabic and English only) and Add.1	The promise of technology: potentials and limitations	A E F R S
E/CONF.70/CBP/3	Policy options	A E F R S
E/CONF.70/CBP/4 and Add.1 and 2	Present and future activities of the United Nations system in water resources development	E F R S

B. Documents issued in the limited series*

Symbol	Title
Plenary	
E/CONF.70/L.1	Report on the pre-Conference consultations held at the Gran Hotel Provincial, on 12 March 1977
E/CONF.70/L.2	Draft report of the Conference. Part Two. Background to the Conference. Chapter IV. Constitution of the Conference
E/CONF.70/L.2/Add.1	Draft report of the Conference. Part Three. Proceedings of the Conference. Chapter V. Attendance and organization of work
E/CONF.70/L.2/Add.2	Draft report of the Conference. Part Three. Proceedings of the Conference. Chapter VI. Summary of the general debate
E/CONF.70/L.2/Add.3	Draft report of the Conference. Part Three. Proceedings of the Conference. Chapter VI. Summary of the general debate (continued)
E/CONF.70/L.2/Add.4	Note by the Rapporteur-General
E/CONF.70/L.3	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama, Paraguay, Peru and Venezuela: draft resolution
E/CONF.70/L.4	Report of Committee I
E/CONF.70/L.4/Add.1	Report of Committee I. Addendum. Part One
E/CONF.70/L.4/Add.2	Report of Committee I. Addendum. Part One (continued)
E/CONF.70/L.4/Add.3	Report of Committee I. Addendum. Part One (continued)
E/CONF.70/L.4/Add.4	Report of Committee I. Addendum. Part One (continued)
E/CONF.70/L.4/Add.5	Report of Committee I. Addendum. Part Two
E/CONF.70/L.5	Report of Committee II
E/CONF.70/L.5/Add.1	Report of Committee II. Addendum. Part One

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* Issued in Arabic, English, French, Russian and Spanish.

Symbol	Title
Plenary (continued)	
E/CONF.70/L.5/Add.2	Report of Committee II. Addendum. Part One (continued)
E/CONF.70/L.5/Add.3	Report of Committee II. Addendum. Part One (continued)
E/CONF.70/L.5/Add.4	Report of Committee II. Addendum. Part One (continued)
E/CONF.70/L.5/Add.5	Report of Committee II. Addendum. Part Two
E/CONF.70/L.6	Credentials of representatives to the Conference. Report of the Credentials Committee
E/CONF.70/L.7	Burundi, Chad, Ivory Coast, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, Sudan, Tunisia, United Republic of Tanzania and Zaire: amendment to draft resolution VII contained in document E/CONF.70/L.5/Add.5
E/CONF.70/L.8	Plan of Action of Mar del Plata Draft proposal submitted by the Chairman of the Contact Group
Committee I	
E/CONF.70/C.1/1	Guide to sources of recommendations Note by the secretariat of the Conference
E/CONF.70/C.1/L.1	Assessment of water resources Argentina: amendments to paragraph 28 of document E/CONF.70/9
E/CONF.70/C.1/L.2	Draft amendments proposed to paragraphs 28 and 38 of document E/CONF.70/9
E/CONF.70/C.1/L.3	Assessment of water resources France: amendments to paragraphs 62, 63 and 64 of document E/CONF.70/9
E/CONF.70/C.1/L.4	Argentina, Uruguay and Venezuela: draft resolution
E/CONF.70/C.1/L.4/Rev.1	Argentina, France, Uruguay and Venezuela: revised draft resolution
E/CONF.70/C.1/L.5	Revised text of paragraph 28 contained in document E/CONF.70/9 prepared by the informal working group composed of Argentina, Ethiopia, Oman, Sweden and United States of America

Symbol	Title
Committee I (continued)	
E/CONF.70/C.1/L.6	Revised text of paragraph 62 contained in document E/CONF.70/9 prepared by the informal working group composed of France, Netherlands, Indonesia, Nigeria, Algeria, Argentina and United Republic of Tanzania
E/CONF.70/C.1/L.7	Draft amendments proposed to paragraphs 66, 67 and 68 of document E/CONF.70/9 and paragraph 163 (24) of document E/CONF.70/10
E/CONF.70/C.1/L.8	Draft amendments proposed by Mexico to paragraph 66 of document E/CONF.70/9
E/CONF.70/C.1/L.9	Assessment of water resources Argentina, Mexico, Uruguay and Venezuela: draft recommendation addressed to Committee II in connexion with chapter I, section A, of document E/CONF.70/9
E/CONF.70/C.1/L.10	Draft amendments proposed to paragraphs 69, 70, 72, 75, 76, 77 and 99 of document E/CONF.70/9
E/CONF.70/C.1/L.11	Water resources assessment Ghana, Iran, Spain and Uruguay: draft resolution
E/CONF.70/C.1/L.12	Argentina: draft resolution
E/CONF.70/C.1/L.13	Revised text of paragraph 66 contained in document E/CONF.70/9 prepared by the informal working group composed of Argentina, Austria, Brazil, Denmark, Finland, France, Mexico, Nigeria, Norway, Sweden, Uruguay and Venezuela
E/CONF.70/C.1/L.14	Spain: amendments to paragraphs 76 and 77 of document E/CONF.70/9
E/CONF.70/C.1/L.15	Austria: amendment to paragraph 163 (18) and (19) of document E/CONF.70/10
E/CONF.70/C.1/L.16	Revised text of paragraphs 67 and 68 contained in document E/CONF.70/9 prepared by the informal working group composed of Austria, Brazil, Denmark, Finland, France, Germany, Federal Republic of, Nigeria, Norway, Sweden and the Syrian Arab Republic

Symbol	Title
Committee I (continued)	
E/CONF.70/C.1/L.17	Amendments to paragraphs 71, 72 and 99 (k) contained in document E/CONF.70/9, prepared by the informal working group composed of Argentina, Bolivia, Canada, France, Nepal, Paraguay and Uruguay
E/CONF.70/C.1/L.18	Amendment proposed by the Netherlands to the draft resolution contained in document E/CONF.70/C.1/L.12
Committee II	
E/CONF.70/C.2/1	Guide to sources of recommendations Note by the secretariat of the Conference
E/CONF.70/C.2/L.1	Planning, management and institutional aspects Bangladesh: amendment to chapter III of document E/CONF.70/9
E/CONF.70/C.2/L.2	Planning, management and institutional aspects Peru: draft recommendation
E/CONF.70/C.2/L.3	II. Action at the regional level Union of Soviet Socialist Republics: amendments proposed to paragraphs 85, 86, 92, 97, 99, 100, 101, 102 and 103 of document E/CONF.70/9
E/CONF.70/C.2/L.4	Policy, planning and management Text prepared by the Rapporteur on the basis of amendments submitted by delegations to chapter I, section B of document E/CONF.70/9
E/CONF.70/C.2/L.5	Public information, education, training and research Text prepared by the Rapporteur on the basis of amendments submitted by delegations to chapter I, section C of document E/CONF.70/9
E/CONF.70/C.2/L.6	Consolidated action recommendations Proposal by Jamaica and Pakistan
E/CONF.70/C.2/L.6/Rev.1	Consolidated action recommendations Revised proposal by Jamaica and Pakistan
E/CONF.70/C.2/L.7	Technical co-operation among developing countries Jamaica and Pakistan: draft resolution

Symbol	Title
Committee II (continued)	
E/CONF.70/C.2/L.7/Rev.1	Technical co-operation among developing countries Jamaica and Pakistan: revised draft resolution
E/CONF.70/C.2/L.8	I. Action at the national level II. Action at the regional level III. Action at the international level Text prepared by the Rapporteur on the basis of amendments submitted by delegations to chapters I, II and III of document E/CONF.70/9
E/CONF.70/C.2/L.9	River Commissions Mauritania, Nigeria, Senegal, Sudan, and Thailand: draft resolution
E/CONF.70/C.2/L.10	Water policies in the occupied territories Afghanistan, Algeria, Angola, Bahrain, Bangladesh, Benin, Burundi, Cuba, Democratic Yemen, Egypt, India, Iraq, Kuwait, Libyan Arab Republic, Madagascar, Mauritania, Morocco, Nigeria, Oman, Panama, Qatar, Saudi Arabia, Senegal, Sri Lanka, Sudan, Syrian Arab Republic, Tunisia, Uganda, United Arab Emirates, Yemen, Yugoslavia and Zambia: draft resolution
E/CONF.70/C.2/L.11	Role of water in combating desertification Ethiopia, Kenya, Nigeria and Sudan: draft resolution
E/CONF.70/C.2/L.12	III. Action at the international level Denmark, Finland, Greece, Norway and Sweden: amendment to chapter III of document E/CONF.70/9
E/CONF.70/C.2/L.13	Institutional arrangements for international co-operation in the water sector Proposal by the Chairman of the Contact Group
E/CONF.70/C.2/L.14	Proposal by the Chairman of the Contact Group

C. Supporting documents

Symbol	Title	Languages
E/CONF.70/A.1	Water law and legislation: how to use them to obtain optimum results from water resources, by Guillermo J. Cano	E F R S
E/CONF.70/A.2	Non-conventional water resources: some advances in their development, by Menahem Kantor	E F R S
E/CONF.70/A.3	International river basin co-operation: the lessons from experience, by I. K. Fox	E F R S
E/CONF.70/A.4	The design and evaluation of institutional arrangements for water planning and management, by C. W. Howe	E F R S
E/CONF.70/A.5	Water for the Thousand Million, by Intermediate Technology Development Group Ltd.	E
E/CONF.70/A.6	Pricing as a means of controlling the use of water resources, prepared by the World Bank	E F S
E/CONF.70/A.7	An approach for selection of labour vs. capital-intensive technologies for water resource development projects, prepared by the World Bank	E S
E/CONF.70/A.8	Long-term planning of water management, prepared under the auspices of the ECE Committee on Water Problems	E F R
E/CONF.70/A.9	Rational methods of flood control planning in river basin development, prepared under the auspices of the ECE Committee on Water Problems	E F R
E/CONF.70/A.10	Principles and methods for the provision of economic incentives in water supply and waste water disposal systems, prepared under the auspices of the ECE Committee on Water Problems	E F R
E/CONF.70/A.11	CMEA glossary on water management, translated under the auspices of the ECE Committee on Water Problems	E/F/R/S
E/CONF.70/A.12	Work of the International Law Commission on the law of non-navigational uses of international water courses	E F R S

Symbol	Title	Languages
E/CONF.70/A.13 a/	Selected bibliography on water resources, planning and management, prepared by the Dag Hammarskjøld Library, United Nations	Multilingual
E/CONF.70/A.14	Socio-economic aspects of urban water resources, planning and management, prepared by UNESCO	E F R S
E/CONF.70/A.15	Evaluation of economic benefits of hydrological services, prepared by WMO	E F R S
E/CONF.70/A.16	The water resources of Latin America, regional report prepared by ECLA	E S
E/CONF.70/A.17	Basic needs, strategy and water resources policy, prepared by the ILO	E F S
E/CONF.70/A.18	Water development and the environment in Latin America (summary), prepared by ECLA	E S
E/CONF.70/A.19	Water, women and development, prepared by the CSDHA	E
E/CONF.70/A.20	Eutrophication and rehabilitation of surface water, prepared by UNEP	E F R S
E/CONF.70/A.21 b/		
E/CONF.70/A.22 and Corr.1	Appropriate construction technology for water control and irrigation works in developing countries, World Employment Programme, prepared by the ILO	E
E/CONF.70/A.23	Drinking water supply, a field for UNICEF assistance, prepared by UNICEF	E F S
E/CONF.70/A.24	Isotope hydrology, prepared by IAEA	E F R S
E/CONF.70/A.25	Integrated farm water management, prepared by FAO	E F S
E/CONF.70/A.26	Environmental issues in river basin development, prepared by UNEP	E

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a/ This document can be obtained under the symbol ST/LIB/SER.B/23.

b/ Not issued.

Symbol	Title	Languages
E/CONF.70/A.27	Note to the United Nations Water Conference on preparations for the United Nations Conference on Desertification	E
E/CONF.70/A.28	Water: resource and hazard, prepared by UNDRO	E F R S

D. Thematic papers and abstracts**

Symbol	Title	Submitted by	TP also available in
AB 1	(Policy and organization of water research in the	United	
	(United Kingdom	Kingdom	
TP 1	(		
AB 2	(Methods for estimating ground water and resources	Hungary	
	(and the balance of subsurface waters		
TP 2	(		
AB 3	(Environmental aspects of pollution control in	Hungary	
	(Hungary		
TP 3	(		
AB 4	(Education and training in water management	Hungary	
	(		
TP 4	(		
AB 5	(Restriction of supply and risk in water supply	Hungary	
	(systems		
TP 5	(		
AB 6	(Development feasibility studies on minor river	Hungary	
	(basins and water resources projects		
TP 6	(		

** The abstracts (E/CONF.70/ABSTRACT) of thematic papers presented by Governments are issued in English, French, Russian and Spanish. The titles of the thematic papers (E/CONF.70/TP) are given in their original languages. Where translations of these have been provided by Governments the relevant languages are shown.

AB = E/CONF.70/ABSTRACT.

TP = E/CONF.70/TP.

... = Not available.

Symbol		Title	Submitted by	TP also available in
AB	7	Economic significance of flood control development	Hungary	
TP	7			
AB	8	International rivers, international river basins and international co-operation on them	Hungary	
TP	8	...		
AB	9	Water law and its implementation in Poland	Poland	
TP	9			
AB	10	Long-term national water resources development planning in Poland	Poland	
TP	10			
AB	11	State and methodology of ground-water investigations	Poland	
TP	11			
AB	12	Polish research programme for system-oriented regional management of water resources	Poland	
TP	12			
AB	13	Computerized optimization of water releases from reservoirs	Austria	
TP	13			
AB	14	River basin development plans in Liberia	Liberia	
TP	14			
AB	15	Integrated development of surface water and ground-water resources in Iran	Iran	
TP	15			
AB	16	Increase of the Nile yield	Egypt	
TP	16			
AB	17	Environmental impacts of the Aswan High Dam	Egypt	
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Symbol	Title	Submitted by	TP also available in
AB 18	Ground-water potentialities in Egypt	Egypt	
TP 18			
AB 19	The management of irrigation water in Egypt	Egypt	
TP 19			
AB 20 c/	Aquatic weed problems in Egypt	Egypt	
TP 20			
AB 21	Re-use of drainage water for irrigation purposes	Egypt	
TP 21			
AB 22	International aspects of the River Nile	Egypt	
TP 22			
AB 23	Problems of soil erosion and sedimentation in selected water catchment areas in Kenya with special reference to the Tana River	Kenya	
TP 23			
AB 24	Development of a small and simple irrigation/ reclamation system in Indonesia	Indonesia	
TP 24			
AB 25	The role of desalting technology in meeting Kuwait's fresh water needs	Kuwait	
TP 25			
AB 26	Hydrogeology of the Gash River Basin at Kassala - Sudan	Sudan	
TP 26			
AB 27	Ground-water resources of the Sudan	Sudan	
TP 27			
AB 28	Evaporation in the Sudan	Sudan	
TP 28			

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Symbol	Title	Submitted by	TP also available in
AB 29	Crop water use in irrigated and rainfed agriculture in the Sudan	Sudan	
TP 29			
AB 30	Projects for the increase of the Nile yield with special reference to the Jonglei project	Sudan	
TP 30			
AB 31	Notes of the draft Ground-water Act of Thailand	Thailand	
TP 31	...		
AB 32	Hydroelectric power development in Thailand	Thailand	
TP 32			
AB 33	Electrical pumping project	Thailand	
TP 33			
AB 34	Current use and perspectives of surface water resources in Thailand	Thailand	
TP 34			
AB 35	Water for domestic use in rural areas	Thailand	
TP 335			
AB 36	River basin management in the United Kingdom	United Kingdom	
TP 36			
AB 37	Long-term water resources planning in Iran	Iran	
TP 37			
AB 38	Water resources of the Somali Democratic Republic	Somalia	
TP 38			
AB 39/ Rev.1	Problems of water resources development in Bangladesh	Bangladesh	
TP 39			
AB 40	Adjusting time of seeding for exploiting yield potential of HYV rice in irrigated areas in Bangladesh	Bangladesh	
TP 40			

Symbol	Title	Submitted by	TP also available in
AB 41	Water quality studies for a multipurpose reservoir storing waters of manifold origin	Austria	
TP 41			
AB 42	Achievements, experiences and problems concerning flood control, protection from avalanches and torrent control in Austria	Austria	
TP 42			
AB 43	The significance of quantitative statements in connexion with combined investigations of Karst waters	Austria	
TP 43			
AB 44	Technical approaches to and means of developing understanding of water resources and their use, management and protection in Romania	Romania	
TP 44	Conceptions techniques et voies de développement dans la connaissance, l'utilisation, le contrôle et la protection des eaux en Roumanie		
AB 45	Long-term national programme for river basin development as the foundation of water management policy in Romania	Romania	
TP 45			
AB 46	Preliminary results of a drilling scheme to supply water to Ivory Coast villages and other populated areas situated in Barremian formations	Ivory Coast	
TP 46	Premiers résultats des forages destinés à l'alimentation en eau des villages réalisés dans le Birrimien de la Côte d'Ivoire		
AB 47	Principal direction of the development of the water resources of the Byelorussian SSR.	Byelorussian SSR	
TP 47	Основные направления развития водного хозяйства Белорусской ССР		
AB 48	Developing ground-water resources in a pre-cambrian area with glacial and glacio-fluvial soils	Finland	
TP 48			

Symbol	Title	Submitted by	TP also available in
AB 49	An approach to planning for optimal results in the control of water pollution in the pulp and paper industry	Finland	
TP 49			
AB 50	Water supply for the Helsinki metropolitan area	Finland	
TP 50			
AB 51	Finnish experiences in water-resources planning and management policy	Finland	
TP 51			
AB 52	The development of water resources: survey and policy options in bilateral development co-operation	Finland	
TP 52			
AB 53	Experiences in joint administration of border watercourses	Finland	
TP 53			
AB 54	Water resources planning and development in Dinaric Karst	Yugoslavia	
TP 54			
AB 55	Development and conservation of water resources: ways and means	Yugoslavia	
TP 55			
AB 56	The organization of water resources development: management problems within the context of the Yugoslav self-management system	Yugoslavia	
TP 56			
AB 57	International co-operation in the conservation of international watercourses	Yugoslavia	
TP 57	...		

Symbol	Title	Submitted by	TP also available in
AB 58 TP 58	Water resources, water needs and water development planning in Yugoslavia	Yugoslavia	
AB 59 TP 59	Ground-water resources exploration and development and its significance for the development of the national economy of the German Democratic Republic	German Democratic Republic	
AB 60 TP 60	Rational use of the ground-water resources in the German Democratic Republic - Problems and ways of solution	German Democratic Republic	
AB 61 TP 61 and Add.1	The world's water in a human perspective Appendice au rapport du Saint-Siège pour la conférence des Nations Unies sur l'eau	Holy See	
AB 62 TP 62	Opportunities for the application of intermediate technology to the development of water resources in disaster situations	Ethiopia	
AB 63 TP 63	The hydrological face of Spain ...	Spain	
AB 64 TP 64	Prospects for the hydrological sciences ...	Spain	
AB 65	Techniques for assessing resources in the initial stages of the development of hydraulic systems	Spain	
TP 65	Evaluación y planificación de recursos hidráulicos a distintos niveles y etapas		
AB 66/ Rev.1	Information and control system of the Isabel II Water Agency installations	Spain	
TP 66	Sistema de información y control del abastecimiento de agua a Madrid		

Symbol	Title	Submitted by	TP also available in
AB 67	Regulations relating to water and the existing hydrological situation: analysis of basic concepts	Spain	
TP 67	...		
AB 68/ Rev.1	Training and specialization in water resources: spanish experience	Spain	
TP 68	Formación y especialización en el campo de los recursos hidráulicos. experiencia española		
AB 69	Swiss practice with regard to international co-operation in matters pertaining to water	Switzerland	
TP 69	La pratique suisse en matière de coopération internationale dans le domaine des eaux		
AB 70	Water resources for water supply in Bangkok	Thailand	
TP 70			
AB 71	Increased use of ground-water resources in arid and semi-arid countries - artificial recharge of ground water and development of ground water in hard rocks	Sweden	
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AB 72/ Rev.1	Swedish policy for water quality protection	Sweden	
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AB 73	Water rights and land control in arid areas	Botswana	
TP 73			
AB 74	Waterworks in Japan	Japan	
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AB 75	Method of dealing with water problems particularly in metropolitan areas	Japan	
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AB 76	Basic plan for water resources development in Japan	Japan	
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Symbol	Title	Submitted by	TP also available in
AB 77 c/	Residential and industrial water management in Austria by the Federal Ministry for Construction and Technology	Austria	
TP 77			
AB 78	Training of professional staff in the institutional, economic and legal aspects of water resource management - Argentina's experience and prospects	Argentina	
TP 78	La formación de personal profesional en los aspectos administrativos, económicos y legales referentes al manejo de recursos hídricos - experiencia Argentina y perspectivas		
AB 79	Argentina's experience with regard to ground water in arid and semi-arid areas	Argentina	
TP 79	Experiencia argentina en materia de agua subterránea en zonas áridas y semiáridas		
AB 80	Argentina's experience in river basin management and control of floods, erosion and sedimentation	Argentina	
TP 80	...		
AB 81	Scientific and technological water research in the Argentine Republic	Argentina	
TP 81	Las investigaciones científicas y tecnológicas de carácter hídrico en la República Argentina		
AB 82/ Rev.1	Snow surveys conducted by Agua y Energía Eléctrica in the Argentine Andes	Argentina	
TP 82	Investigaciones nivológicas realizadas por Agua y Energía Eléctrica en los Andes argentinos		
AB 83	Argentina's experience with regard to hydrological data	Argentina	
TP 83	Experiencia argentina en el campo de la informacíon hídrica		

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Symbol		Title	Submitted by	TP also available in
AB	84 c/	Importance of Seismic risk studies for major hydraulic works	Argentina	
TP	84	Importancia de los estudios de riesgo sísmico en grandes obras hidráulicas		
AB	85	River basin committees in the Argentine Republic	Argentina	
TP	85	Los comités de cuencas hídricas en la República Argentina		
AB	86	Regional co-operation for research in hydraulics	Argentina	
TP	86	Cooperación regional para la investigación hidráulica		
AB	87	The use of remote sensors in hydrology	Argentina	
TP	87	...		
AB	88	Drinking-water supply policies	Argentina	
TP and Corr.1	88	Las políticas de abastecimiento de agua potable		
AB	89 c/	Methodological aspects of water planning	Argentina	
TP	89	...		
AB	90	Alteration of climatic conditions: control of precipitation	Argentina	
TP	90	Modificación de las condiciones climáticas. El control de las precipitaciones		
AB	91	Study and application of earthquake-resistant arrangements	Argentina	
TP	91	...		
AB	92	Integration of water management into national social, economic and environmental goals	U.S.A.	
TP	92	...		
AB	93	Water and food and fibre	U.S.A.	
TP	93			
AB	94	Meeting domestic water requirements in developing countries	U.S.A.	
TP	94			

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AB 95	Water resources research and education	U.S.A.	
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AB 96	Management of upland watersheds	U.S.A.	
TP 96			
AB 97	Water pollution from toxic substances	U.S.A.	
TP 97			
AB 98	The National Water Conference	Italy	
TP 98	...		
AB 99	Water resources in the People's Republic of Benin	Benin	
TP 99	La situation de l'eau en République Populaire du Bénin		
AB 100	Stock-taking of the supply of and demand for water resources in Mexico	Mexico	
TP 100	...		
AB 101	Technological progress in Mexico in the use and exploitation of its water resources	Mexico	
TP 101	...		
AB 102	The National Water Plan of Mexico	Mexico	
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AB 103	Policies of the Mexican Government with respect to the use of water resources	Mexico	
TP 103	...		
AB 104	Mexico's contribution to the development of the countries of the Third World	Mexico	
TP 104	...		
AB 105	Water resources development and management planning in arid zones: a case history	Israel	
TP 105			

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AB 106 TP 106	Deterioration of water quality due to long-range transport of air pollution (acid precipitation etc.)	Norway and Sweden	
AB 107/ Rev. 1 TP 107	The United States experience in flood plain management	U.S.A.	
AB 108 TP 108	Integration of water quality and water resources planning and management	U.S.A.	
AB 109 TP 109	Establishment of quality criteria for water use in Australia	Australia	
AB 110 TP 110	Development of a national approach to water assessment, research and management	Australia	
AB 111 TP 111	Salinity control and drainage	Australia	
AB 112 TP 112	Administration of interstate rivers in Australia	Australia	
AB 113 TP 113	The ground-water resources of the Swan Coastal Plain and conflicts in their potential use	Australia	
AB 114 TP 114	Policy, legislative and institutional initiatives in water resources management in South Australia	Australia	
AB 115 TP 115	Water management in New South Wales	Australia	
AB 116 TP 116	The response of ground-water systems to drought	Australia	

Symbol	Title	Submitted by	TP also available in
AB 117	Basic environmental considerations in the management of Australian inland waters	Australia	
TP 117			
AB 118	Artificial replenishment of ground-water supplies of the Burdekin Delta	Australia	
TP 118			
AB 119	Environmental protection problems in reservoir construction	U.S.S.R.	
TP 119	Проблемы охраны окружающей среды при создании водохранилищ		English
AB 120	Methods for protecting ground-water against pollution	U.S.S.R.	
TP 120	Методы защиты подземных вод от загрязнения		English
AB 121	Water supply for thermal and atomic power stations and water protection	U.S.S.R.	
TP 121	Водообеспечение тепловых и атомных электростанций и охрана вод		English
AB 122	Basic trends in the development of methods for the treatment of urban and industrial sewage in the USSR	U.S.S.R.	
TP 122	Основные направления развития методов очистки городских и промышленных сточных вод в СССР		English
AB 123	The role of organizational, economic and technological measures in protecting river basins and ground-water resources from pollution and exhaustion	U.S.S.R.	
TP 123	Роль организационных, экономических и технических мероприятий в защите речных бассейнов и подземных вод от загрязнения и истощения		English
AB 124	Underground mineral, thermal and industrial water resources in the USSR	U.S.S.R.	
TP 124	Ресурсы подземных минеральных, термальных и промышленных вод СССР		

Symbol	Title	Submitted by	TP also available in
AB 125	Moisture transfer in the atmosphere over South America in connection with large-scale research on the continent's water budget	U.S.S.R.	
TP 125	Перенос влаги в атмосфере над Южной Америкой в связи с крупномасштабными исследованиями водного баланса континента		English
AB 126	Hydrological problems arising from growth in the production of electrical energy	U.S.S.R.	
TP 126	Гидрологические проблемы, возникающие в связи с развитием энергетики		English
AB 127	The world water budget and the water resources of the earth	U.S.S.R.	
TP 127	Мировой водный баланс и водные ресурсы земли		English
AB 128	Preparation of long-term water economy budgets for river basins in the USSR	U.S.S.R.	
TP 128	Разработка перспективных водохозяйственных балансов речных бассейнов в СССР		English
AB 129	Ground-water resources of the USSR and their exploitation in the economy	U.S.S.R.	
TP 129	Ресурсы подземных вод СССР и их использование в народном хозяйстве		English
AB 130	Water resources of the USSR	U.S.S.R.	
TP 130	Государственный учет вод и их использования - основа их рационального использования и охраны		English

Symbol	Title	Submitted by	TP also available in
AB 131	Hydrological forecasting for the operational planning of water resource use	U.S.S.R.	
TP 131	Гидрологические прогнозы для оперативного планирования и использования водных ресурсов		English
AB 132	Economic and organizational principles of water management	U.S.S.R.	
TP 132	Экономические и организационные принципы управления водным хозяйством		English
AB 133	Comprehensive utilization of the water resources of the Volga	U.S.S.R.	
TP 133	Комплексное использование водных ресурсов Волги		English
AB 134	Main trends in preparatory hydrogeological work on the artificial replenishment of ground-water reserves	U.S.S.R.	
TP 134	Основные направления гидрогеологических работ для обоснования искусственного восполнения запасов подземных вод		English
AB 135	Main trends in the protection of reservoirs from surface run-off in urban areas of the Ukrainian SSR	Ukrainian S.S.R.	
TP 135	Основные тенденции охраны водоемов от поверхностного стока с территории городов Украинской ССР		
AB 136	Artificial replenishment of ground-water reserves and their protection from pollution	Ukrainian S.S.R.	
TP 136	Искусственное восполнение запасов подземных вод и охрана их от загрязнения		

Symbol	Title	Submitted by	TP also available in
AB 137	Multi-purpose measures to protect the river basins of the Ukrainian SSR from pollution	Ukrainian S.S.R.	
TP 137	Комплекс мероприятий по защите речных бассейнов Украинской ССР от загрязнения		
AB 138	Hydrological forecasts and their use in day-to-day water management planning	Ukrainian S.S.R.	
TP 138	Гидрологические прогнозы и их использование при оперативном водохозяйственном планировании		
AB 139	Multi-purpose utilization of the water resources of the Dnieper River and problems relating to the protection of the environment	Ukrainian S.S.R.	
TP 139	Комплексное использование водных ресурсов реки Днепр и проблемы окружающей среды		
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AB 143	Development of agricultural irrigation in the Federal Republic of Germany. Tendency towards a more economic use of water resources	Fed. Rep. Germany	
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AB 145	Management of groundwater resources in arid zones	Fed. Rep. Germany	
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AB 146	Evaluation of ground-water potential in terms of quality and quantity in part of the Pampa Plains, Argentina	Fed. Rep. Germany	
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AB 148	Water and soil resources and water management investigations for land development in semi-arid northeast Brazil	Fed. Rep. Germany	
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AB 149	Facultative anaerobic/aerobic lagoons in combination with artificial biological stages	Fed. Rep. Germany	
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TP 187	Le centre international de formation et de prospective pour la gestion des ressources en eau		
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Annex II

PARALLEL AND ASSOCIATED ACTIVITIES

Encounter for journalists

1. In resolution 3513 (XXX) of 15 December 1975, the General Assembly requested the Secretary-General, inter alia, to give wide publicity to the United Nations Water Conference through the Office of Public Information and the Centre for Economic and Social Information.

2. Accordingly, the public information programme prepared in connexion with the holding of the Conference included an "Encounter for Journalists on the Water Conference" organized by OPI/CESI in close co-operation with the Government of Argentina and the United Nations Water Conference secretariat. The broad purpose of the Encounter, which took place on 11 and 12 March 1977 at Mar del Plata immediately before the Conference, was to inform participating journalists of the basic problems related to water resources, to stimulate discussion of these matters and to assist the media in effective coverage of the Conference.

3. Twenty journalists from developing countries were invited on CESI fellowships. Of these, seven came from Africa, six from Asia, five from Latin America and two from the Middle East. Besides these journalists invited on fellowships, some 80 other journalists participated in the Encounter.

4. Opening the Encounter, Mr. Luís Urbano Jáuregui, President of the Argentine National Commission for the United Nations Water Conference, reminded journalists of the important contribution they could make in extending public consciousness of water-related problems. This theme was also taken up by Mr. Yahia Abdel Mageed, Secretary-General of the Conference, in addressing the first session of the Encounter on the subject: "What to expect of the Water Conference". He stressed that one of the most significant accomplishments of the Conference should be the creation of awareness and consciousness of the magnitude and importance of water-related problems, and appealed for the help of the media in delivering this salutary message to the world community.

5. During the two-day session, seven panelists spoke on the following subjects: "The technological challenge"; "The managerial challenge"; "How critical are the world water problems?". A question and answer period followed each address.

6. In the course of discussion, it was acknowledged by the panelists that since it could not be asserted with accuracy that the human race was running out of water, the critical need for international collaboration in the water sector did not rest merely upon a forecast of an immediately threatening global thirst. It must rather be recognized that lack of availability of water of suitable quality constituted a limitation to the development of human well-being in certain countries now, and that others might well be affected in the future in one way or another. More effective use must therefore be made of existing technology and

managerial skills in the water sector: this was the message that must be communicated to the peoples of the world.

7. Subsequent questions and answers focused on such matters as combating pollution, the need for increased co-operation among developed and developing countries and, above all, the need for the recognition of water resources development as a priority in national development plans, especially in relation to community water supply.

8. At the heart of discussion was the realization that solution of water-related problems depended upon the extent of political will, national commitment and promotion of international co-operation in overcoming financial, technological and manpower constraints. In this context, the Secretary-General of the Conference pointed out that any effective political action was necessarily dependent on public recognition of the gravity of the problems and that in the achievement of this aim, the media had a crucial role to play in disseminating information.

Technical and scientific seminars on water resources

9. Simultaneously with the United Nations Water Conference, a series of technical and scientific seminars on water resources was organized by the Argentine National Commission for the Conference. Fourteen meetings in all were scheduled between 14 and 25 March 1977 at Mar del Plata.

10. At the invitation of the Argentine National Commission, experts from Argentina and other nations studied how best to satisfy the requirements of an ever-increasing demand for water in the face of its limited availability. The seminars, which resulted in an effective exchange of technological and scientific information, covered such subjects as managerial and technical education and training in water economy, legislation and management; the supply of potable water and sewage disposal to rural communities; water and electricity; and water and atoms.

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