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HUMAN RIGHTS AND SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENTS

Developments elsewhere in the United Nations system of interest to the Commission

Report of the Secretary-General

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I. INTRODUCTION

1. The original and basic resolution of the General Assembly concerning human rights and scientific and technological developments, resolution 2450 (XXIII) of 19 December 1968, invites the Secretary-General to undertake "a study of the problems in connexion with human rights arising from developments in science and technology". The third preambular paragraph to the resolution endorses the idea that problems connected with human rights and scientific and technological developments "require thorough and continuous interdisciplinary studies". A number of other resolutions call for continuous studies of scientific and technological developments in the light of human rights and for strengthening co-operation and co-ordination between the bodies concerned. General Assembly resolution 2721 (XXV) of 15 December 1970 requests the Secretary-General "to continue to study the problems relating to human rights as they arise from developments in science and technology"; its resolution 3026B (XXVII) of 15 December 1972 invites him "to accelerate and complete preparation of relevant reports" in this field; Commission resolution 10 (XXVII) of 18 March 1971 requests that he should continue "his study of the consequences, for the observance of human rights, of current developments in science and technology"; Commission resolution 11 (XXXII) of 5 March 1976 requests him to continue and, if necessary, strengthen co-operation and adequate co-ordination between United Nations organs and the specialized agencies with regard to the impact of science and technology on human rights, in particular with a view to the proposed conference on science, technology and development".

2. Of particular importance in connexion with the present paper is the request of the General Assembly in its resolution 3268 (XXIX) of 10 December 1974 that the Commission "draw up a programme of work" in connexion with human rights and scientific and technological developments. In drawing up such a programme it is important for the Commission to know what is taking place elsewhere in the United Nations system, perhaps particularly the developments relating to: institutional arrangements for science and technology; the formulation of a science and technology policy for development, and the forthcoming United Nations Conference on Science and Technology for Development. The Commission will wish to ensure on the one hand that there should be no overlapping between its activities and those of other organs, and on the other hand that the human rights aspects of scientific and technological developments shall not be overlooked. The document should be read in conjunction with the others, being prepared for the Commission, on science policy and technological assessment machinery on the national and international levels respectively. National and international technological assessment machinery were dealt with in a preliminary fashion in, respectively, paragraphs 150-188 and 213-230 of the Secretary-General's report on the balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity (document E/CN.4/1199/Add.1), prepared in accordance with General Assembly resolution 2450 (XXIII).

3. The present report will be brought up to date for subsequent sessions of the Commission.

II. GENERAL DESCRIPTION OF THE WORK WHICH HAS BEEN OR IS BEING UNDERTAKEN IN THE UNITED NATIONS OUTSIDE THE COMMISSION ON HUMAN RIGHTS IN CONNEXION WITH SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENTS

1. Standing committees of the General Assembly

4. The United Nations Scientific Committee was set up in accordance with General Assembly resolution 810B (IX) of 4 December 1954, which authorized the Secretary-General to establish an advisory committee, composed of scientists appointed by seven Member States, to assist him in preparing for the first International Conference on the Peaceful Uses of Atomic Energy, which was held in 1955. This Committee was continued in existence in accordance with General Assembly resolution 912 (X) of 3 December 1955. Subsequently, by resolution 1344 (XIII) of 13 December 1958, it was renamed the United Nations Scientific Advisory Committee and its mandate was broadened. The Committee prepared the International Conferences on the Peaceful Uses of Atomic Energy of 1955 and 1958 and assisted the Secretary-General in matters relating to peaceful uses of atomic energy with which the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas of 1963 concerned itself. The terms of reference of the Committee consist in advising and assisting the Secretary-General, at his request, in all matters relating to the peaceful uses of atomic energy with which the United Nations may be concerned. 1/

5. The United Nations Scientific Committee on the Effects of Atomic Radiation was established by General Assembly resolution 913 (X) of 3 December 1955 with a membership of 15 Member States, each represented by scientific experts, and entrusted with the compilation and wide distribution of all scientific data on the short-term and long-term effects upon man and his environment of ionizing radiation. By its resolution 3154 C (XXVIII) of 14 December 1973, the General Assembly increased the size of the Committee by five members. The Committee has submitted reports to the General Assembly annually since 1956. Substantive supporting services to the Committee are provided by its Secretariat, which assembles and tabulates scientific information in a form suitable for the Committee's consideration, performs the calculations and analyses requested by the Committee, and advises other units of the United Nation's Secretariat on matters related to the assessment of levels and effects of radiation. The future activities of the Committee are to continue its

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1/ The question of the application of science and technology to development which is touched upon in this paragraph and in paras. 6-34 below is dealt with in the Secretary-General's report on the balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity, prepared in pursuance of General Assembly resolution 2450 (XXIII) of 19 December 1968, on human rights and scientific and technological developments (see E/CN.4/1199/Add.1, paras. 189-197).

assessment of doses, effects and risks of radiation from all sources and to submit to the General Assembly at its thirty-second session a report reviewing the genetic and somatic effects of ionization radiation, environmental radio-activity, occupational exposure and medical irradiation. 2/

6. The Committee on the Peaceful Uses of Outer Space was established by General Assembly resolution 1472 A (XIV) of 18 December 1959 to promote international co-operation in the scientific, technical and legal fields connected with the peaceful uses and exploitation of outer space, and to study practical and feasible means for giving effect to programmes involving the peaceful uses of outer space, including practical applications of space technology which could appropriately be undertaken under United Nations auspices, and the nature of legal problems which may arise from the exploration of outer space. It consists of thirty-seven Member States. In the discharge of its mandate, as supplemented by subsequent resolutions of the General Assembly, the Committee has established a Scientific and Technical Sub-Committee, a Legal Sub-Committee and various working groups. The Scientific and Technical Sub-Committee deals with questions relating to remote sensing of the earth by satellites, consideration and review of the United Nations programme on space applications and consideration of the options relating to a possible United Nations conference on outer space matters. High priority questions before the Legal Sub-Committee are principles governing the use of artificial earth satellites for direct television broadcasting and the legal implications of remote sensing of the earth from space. 3/

2/ The question of hazards arising from atomic radiation which is touched upon in this paragraph and in paragraph 34 below is dealt with in the Secretary-General's report on the protection of broad sectors of population against social and material inequalities, as well as other harmful effects which might arise from the use of scientific and technological developments, prepared in pursuance of General Assembly resolution 3150 (XXVIII) of 14 December 1973 on use of scientific and technological developments in the interests of peace and social development (see A/10146, paras. 172-179) and in his report on the balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity. (See E/CN.4/1199, paras. 141-146).

3/ The question of the threat to the respect for the integrity and sovereignty of nations posed by the use of artificial earth satellites is dealt with in a number of reports of the Secretary-General prepared in pursuance of General Assembly resolution 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments and resolution 3150 (XXVIII) of 14 December 1973 on use of scientific and technological developments in the interests of peace and social development (see reports on the respect for the privacy of individuals and the integrity and sovereignty of nations in the light of advances in recording and other techniques, E/CN.4/1116/Add.3 and Corr.1; on uses of electronics which may affect the rights of person and the limits which should be placed on such uses in a democratic society, E/CN.4/1142/Add.2 paras. 52-54; on the protection of broad sectors of the population against social and material inequalities, as well as other harmful effects which might arise from the use of scientific and technological developments, A/10146, paras. 180-191, and on the balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity, E/CN.4/1199, paras. 120-122.

7. The Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor beyond the Limits of National Jurisdiction was established in 1968 by General Assembly resolution 2467 A (XXIII) with a membership of 42 States to study the elaboration of the legal principles and norms which would promote international co-operation in relevant questions; to study the ways and means of promoting the exploitation and use of the resources of the area concerned and international co-operation to that end, taking into account the foreseeable development of technology and the economic implications of such exploitation. It was also authorized to review the studies carried out in the field of exploration and research in this area, to examine proposed measures of co-operation in order to prevent marine pollution and to study further the reservation exclusively for peaceful purposes of this area. The Committee makes recommendations to the General Assembly on all these questions.

2. Central machinery of the Economic and Social Council

8. The Commission on Narcotic Drugs was established by Council resolution 9 (I) of 16 February 1946, to assist the Council in exercising such powers of supervision over the application of international conventions and agreements dealing with narcotic drugs as may be assumed by or conferred on the Council; to advise the Council on all matters pertaining to the control of narcotic drugs, and prepare such draft international conventions as may be necessary. In addition, the Commission performs the functions assigned to it by article 8 of the Single Convention on Narcotic Drugs, 1961. 4/

9. The Committee on Science and Technology for Development (CSTD), a standing committee of the Economic and Social Council, was established by Council resolution 1621 B (LI) of 30 July 1971 "to provide guidance and make recommendations on matters relating to the application of science and technology to development". Resolution 1715 (LIII) of 28 July 1972 provided that the Committee's functions were to include promoting international co-operation in the field of science and technology, including education, training and exchange of experience and information; reviewing and analysing, on a continuing basis, the policy aspects of science and technology for development; stimulating, encouraging and suggesting scientific and technological research and application required to cope with new or changing problems in the field of development; assisting in the process of review and appraisal of the progress in the implementation of the International Development Strategy for the Second United Nations Development Decade in the field of science and technology for development. Some aspects of the work of the Committee are described in Chapters III, IV and V of this report.

4/ The question of the impact of developments in biochemistry on human rights is dealt with in the Secretary-General's report on the protection of the human personality and its physical and intellectual integrity in the light of advances in biology, medicine and biochemistry prepared in pursuance of General Assembly resolution 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments (see E/CN.4/1172/Add.2, paras. 440-534).

10. The Committee on Housing, Building and Planning, a standing committee of the Council, was established and given its terms of reference by Council resolution 903 C (XXXIV) of 2 August 1962. The Committee is responsible for inter alia examination of reports concerning technical assistance activities in the field of housing, related community facilities and physical planning; and the promotion of research and of the exchange and dissemination of experience and information in this field. 5/

11. The Advisory Committee on the Application of Science and Technology to Development (ACAST), a standing expert body of the Council, was established and given its terms of reference by Council resolution 980 (XXXVI) of 1 August 1963. The Advisory Committee is authorized to keep under review progress in the application of science and technology; to review the scientific and technological programmes and activities of the United Nations and related agencies; to consider specific questions referred to it by the Council, or by the Secretary-General, or by the executive heads of the specialized agencies, and to study the need for making changes of organization or other arrangements which would advance the application of science and technology for the benefit of developing countries. In resolution 1621 B (LI) of 30 July 1971, the Council decided that the Advisory Committee should furnish expertise to the CSTD. Some aspects of the work of ACAST are described in Chapters III, IV and V of this report.

12. The CSTD and the ACAST are serviced by the Office for Science and Technology of the United Nations Secretariat, which acts as a focus for interorganizational collaboration in the area of science and technology and carries out substantive work to encourage national, regional and international action to implement the recommendations of the World Plan of Action for the Application of Science and Technology to Development, 6/ to stimulate increased research on the science and technology of developing countries and to further knowledge about and encourage the appropriate application of computer technology for and in developing countries.

3. Regional machinery of the Economic and Social Council

13. The Economic Commission for Africa (ECA) was established in 1958 and in accordance with Council resolution 671 (XXV) is responsible for, inter alia, making or sponsoring investigations and studies of economic and technological problems and developments within the territories of Africa, assisting in the formulation and development of co-ordinated policies as a basis for practical action in promoting economic and technological development in the region and considering social aspects of economic development and the interrelationship of economic and social factors.

5/ The question of the impact of scientific and technological developments on the right to housing is dealt with in the Secretary-General's report on the impact of scientific and technological developments on economic, social and cultural rights prepared in pursuance of General Assembly resolution 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments and subsequent resolution of the General Assembly and the Commission on Human Rights (see E/CN.4/1115, paras. 103-124).

6/ United Nations publication, Sales No. E.71.II.A.18.

Within the secretariat of ECA, a science and technology section has been established to serve as the focal point for United Nations activities undertaken at the regional level for promoting and applying science and technology to development. The Section assists Governments and institutions on the most effective and economical means of promoting science and technology as instruments of accelerating structural change of the African economies and societies and secures the interest and support of institutions providing aid for programmes in science and technology at the national and multinational level. The Section has elaborated the African Regional Plan for the Application of Science and Technology to Development. 7/ The programme of ECA during the biennium of 1976-1977 in the field of assisting Governments in technological policy-making and planning includes advisory services to four Governments in creating national technological planning and policy-making units, four country surveys of governmental machinery for planning and administration in science and technology and the preparation of guidelines and programmes for technology policy research on a regional basis. In the field of promotion of the development of manpower in a number of critical areas of technology essential for development the programme includes preparation of recommendations on the establishment of subregional centres for advanced training and research in marine science and technology. In the field of promotion of regional co-operation in science and technology it includes advisory services to four Governments concerning the establishment of national committees for the implementation of the African Regional Plan, advisory assistance to Governments in the creation of research institutes and development of science and technology popularization programmes. 8/

14. The Economic and Social Commission for Asia and the Far East was established in 1947 by Council resolution 37 (IV). In accordance with Council resolution 1895 (LVII) of 1 August 1974 it is now called "Economic and Social Commission for Asia and the Pacific" (ESCAP). Its terms of reference were revised several times and include making or sponsoring such investigations and studies of economic and technological problems and developments within territories of Asia and the Far East and undertaking or sponsoring the collection, evaluation and dissemination of such economic, technological and statistical information as the Commission deems appropriate. ESCAP has elaborated the Asian Plan of Action for the Application of Science and Technology to Development which deals with the scientific and technological infrastructure in the region, selection of priority areas for research and for the application of existing knowledge and a series of specific problem areas. 9/ Under the science and technology programme of ESCAP the following activities are planned for the 1976-1977 biennium:

7/ United Nations publication, Sales No. E.73.II.K.3.

8/ Proposed Programme Budget for the biennium 1976-1977, A/10006, v. III, p. 9/65.

9/ E/CN.11/1071.

(a) Organization of national seminars with a view to implementing the recommendations contained in the World and Asian Plans of Action for the Application of Science and Technology to Development in order to prepare new topics of research and development for the countries concerned;

(b) Preparation of country reviews in order to identify and evaluate the scientific and technological institutions in member countries;

(c) Assistance in the formulation of national technology policies and preparation of national studies, particularly with respect to the selection of more appropriate technologies through advisory services;

(d) Preparation of interdisciplinary case studies on the constraints to the transfer, generation and absorption of technology in selected countries in the region to serve as guidelines for formulation of national policies;

(e) Assistance to developing countries in setting up institutional mechanism for monitoring and regulating the flow of technology, particularly in the small and medium industries;

(f) Assistance for the development of agricultural machinery suitable for use and production in Asian countries. 10/

15. The Economic Commission for Europe (ECE) was established and given its terms of reference by Council resolution 36 (V) of 28 March 1947. These are similar to those of other regional economic commissions. The main forms of international co-operation within the ECE include dissemination of scientific and technological information, transfer of technology, organization of co-operative international research, technological forecasting in relation to long-term planning and the analysis and review of development in scientific and technological policy. The ECE has established a body of senior advisers on science and technology. There are also senior advisers on environmental problems and a Working Party on Automation. The activities of ECE to be carried out during 1976-1977 include the following:

(a) conducting intergovernmental research studies on technological forecasting and technology assessment;

(b) surveying technological and scientific policies and problems confronting ECE Governments and identifying possibilities for further intergovernmental co-operation in this field;

(c) examining practical means of stimulating the international diffusion of science and technology and of arranging intergovernmental co-operation on research of common interest. 11/

10/ A/10006, p. 7/59

11/ A/10006, vol. II, p.6/46

16. The Economic Commission for Latin America (ECLA) was established in 1948. Under its terms of reference, which were set out in Council resolutions 106 (VI), 234 (IX), 414 C I (XIII), 723 C (XXVIII) and a Council decision adopted at the forty-seventh session on 31 July 1969, ECLA initiates and participates in measures for economic and social development of Latin American countries and for maintaining and strengthening the economic relations of the Latin American countries both among themselves and with other countries. It makes or sponsors studies of economic and technological problems. It carries out analytical work, technical co-operation activities and information activities, at regional and subregional levels, in the fields of, inter alia, human environment and the transfer of technology. A Latin American regional plan of action has been produced 12/ and the ECLA secretariat has envisaged several studies to complement the plan, including: (a) in-depth studies on technological alternatives for Latin America and the reduction of dependence on research carried out outside the area; and (b) evaluation of existing technologies from the point of view of specific local requirements, employment and social objectives. 13/

17. The Economic Commission for Western Asia (ECWA) was established in 1973; its terms of reference, given by Council resolution 1818 (LV) of 9 August 1973, are similar to those of other regional economic commissions. A separate science and technology programme has been established in the Natural Resources, Science and Technology Division of the secretariat, which is concerned with facilitating the establishment of institutional arrangements for the diffusion of new technologies, and with their adaptation and development in the region. The specific activities to be carried out during the biennium of 1976-1977 have two aspects. One of them deals with promotion and encouragement of regional and national action to implement the Regional Plan of Action for the Application of Science and Technology to Development in the Middle East 14/ and includes advisory services to Governments for the formulation of national science and technology plans and policies, an assessment report on current co-operative research and technology in the ECWA region and organizing a seminar on co-operative research and technology in the region. The other deals with provision of information and guidelines in the utilization of new technologies for agriculture, land and water resources management and includes a progress report on the status of agricultural technology at the farm level, a report on low-cost agricultural technology, a report on selected aspects of the application of new technologies to water resources development and management and a report on selected aspects of the application of new technologies to the development and management of land resources, in particular utilization of earth satellite data. 15/ The 1976-1979 medium-term science and technology programme includes the elaboration of "guidelines for co-operative research and technology projects" in the ECWA region.

4. Related United Nations organizations and programmes

18. The United Nations Conference on Trade and Development (UNCTAD) was established in 1964 with a broad competence in the area of trade and development. One of the main aspects of UNCTAD's work is accelerating and facilitating the transfer of technology to developing countries, taking into account the development needs, goals

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12/ E/CN.12/966.

13/ E/C.8/19, para. 33

14/ United Nations publications, Sales No. E. 74.II.A.2

15/ A/10006, vol. III, p. 10/51.

and conditions of those countries, particularly their domestic scientific and technological capabilities, and strengthening the institutional framework for national and international policies in this field. In 1974 the Committee on Transfer of Technology was established within UNCTAD to promote general and consistent policies in the field of transfer of technology and directly related matters and to undertake relevant studies on the transfer of technology. UNCTAD prepared "Guidelines for the Study of Transfer of Technology for Development" 16/ which clarified the conceptual issues and outlined a research strategy and methodology for the future work. This aspect of the work will be carried further in a secretariat study on the conceptual framework of the nature, extent and consequences of technological dependence. 17/ Another area of work has concerned the reverse transfer of technology from developing to developed countries, i.e. the "brain drain". 18/ Policy-oriented initiatives by UNCTAD concern the international patent system, an international code of conduct on transfer of technology, technology transfer centres and national institutions in the transfer of technology, and technical assistance and advisory services in the transfer of technology. A strengthening of the programme of work devoted to the transfer of technology is planned for 1976-1977. The programme will be centred on the following objectives: (a) possible revision of the national and international patent system; (b) elaboration of a universally applicable code of conduct on transfer of technology; (c) study of the policy implications of the reverse transfer of technology; and (d) study of technological dependence. 19/

19. The United Nations Industrial Development Organization (UNIDO) was established by General Assembly resolution 2152 (XXI) of 17 November 1966 to promote industrial development and, by encouraging the mobilization of national and international resources, to assist in promoting and accelerating the industrialization of the developing countries, with particular emphasis on the manufacturing sector. Operational activities of UNIDO entail the dissemination of information on technological innovations originating in various countries and, for the developing countries, assistance in the implementation of practical measures for the application of such information, the development of new technology especially suited to conditions of these countries and action-oriented studies and research programmes. UNIDO's Industrial Technology Programme is primarily directed towards providing assistance to the developing countries in solving the various technological problems that occur in the individual branches of the industrial sector during the process of industrialization. During the biennium 1976-1977 emphasis will be placed on, inter alia, assisting the developing countries in the transfer of practical technological knowledge, in the identification and development of technological processes and in the selection of equipment suited to prevailing conditions. 20/ There is an appreciable science and technology component in the Industrial Services and Institutions Programme which is mainly oriented towards assisting the developing countries in establishing, strengthening and ensuring the smooth and effective functioning of their industrial institutional infrastructure.

16/ TD/B/AC.11/9.

17/ TD/B/424/Annex I.

18/ See, for example, TD/B/AC.11/25.

19/ A/10006, vol. IV, p. 11/69.

20/ A/10006, vol. IV, p. 12/13.

20. The United Nations Development Programme (UNDP) was established by General Assembly resolution 2029 (XX) of 22 November 1965. The primary objective of UNDP is to assist the developing countries in their efforts to accelerate their economic and social development by providing systematic and sustained assistance geared to their national development plans, priority needs and objectives. The UNDP has two important functions in regard to science and technology: (a) to assess the scientific and technological components of projects, so as to establish priorities and decide on the allocation of funds where the projects are to be executed by other organizations; and (b) to formulate programme proposals and assess, implement and review projects with important science and technology components where these projects are to be executed by UNDP itself. Most UNDP projects are means for transferring technology or assisting the developing countries in their efforts at the adaptation and development of science and technology. Activities of UNDP related to science and technology include: a number of global projects on certain aspects of agricultural research; a variety of natural resource surveys and support for research institutes in geology, mining, fishing, oceanography and forestry; assistance in the transfer of operative technology through its pilot and demonstration plant projects and in the adaptation and development of indigenous technology; assistance in the field of new technologies, such as nuclear technology, space technology and computer technology, and assistance in a number of projects in social and humanitarian fields, such as health, nutrition, housing, environment and natural disasters.

21. The United Nations Environment Porgramme (UNEP) was established by General Assembly resolution 2997 (XXVII) of 15 December 1972 in order to ensure effective implementation by Governments and the international community of measures designed to safeguard and enhance the environment for the benefit of present and future generations. Its responsibilities include promoting the contribution of the relevant international scientific and other professional communities to the acquisition, assessment and exchange of environmental knowledge and information and to the technical aspects of the formulation and implementation of environmental programmes within the United Nations system. The priority subject areas of the programme of UNEP are: (a) Human settlements, human health, habitat and well-being, including human settlements technology, control of epidemic diseases and radiological protection; (b) land, water and desertification, including ecosystems, arid lands, tropical forests, soils and water; (c) trade, economics, technology and transfer of technology; (d) oceans, including control of marine pollution and conservation and protection of living aquatic resources; (e) conservation of nature, wild life and genetic resources and (f) energy. Future work of UNEP will deal with such topics as: possible outer limits to changes which man's activities may engender in some elements of the biosphere; beneficial use of weather and climate modification technologies; particular environmental problems of specific industries; eco-development designed to support the efforts of the people living in villages and other rural settlements to understand better and utilize in their own development the basic natural resources and human skills available in their own

environment, and arrangements by which Member States can reach agreement on standards and laws, and on other processes to ensure that they perceive the safe limits of natural processes at work in the biosphere. 21/

22. The United Nations Children's Fund (UNICEF) was established by General Assembly resolution 57 (1) of 11 December 1946 as a temporary body to provide emergency assistance to children in war-ravaged countries. The Fund was placed on a permanent footing by General Assembly resolution 802 (VIII) of 6 October 1953. Its terms of reference were set out in General Assembly resolutions 52 (1), 417 (V) and 802 (VIII). The Fund helps Governments to develop plans and programmes for meeting the needs of their children in a coherent and comprehensive way; it provides a wide variety of supplies and equipment for basic children's services; and it provides financial aid to help meet some of the local costs of developing these services. With respect to maternal and child health, UNICEF has also given substantial support to the introduction and application of modern technologies, both with respect to training and the prevention and treatment of disease. In many countries UNICEF has assisted in the establishment of modern production facilities for certain drugs or vaccines. UNICEF is also assisting a number of countries in the development of more appropriate hand pump designs for rural water supply programmes. In the field of education, it has been assisting many countries in the introduction and use of modern teaching methods, particularly the teaching of elementary science. It is the intention of UNICEF to give more attention to improved village level technology.

23. The United Nations Institute for Training and Research (UNITAR) was established by General Assembly resolution 1934 (XVIII), of 11 December 1963. The research programme of UNITAR deals with, inter alia, problems of science and technology including aspects of technology transfer and its studies are published in the series entitled "UNITAR Research Reports".

5. Specialized agencies and the International Atomic Energy Agency

24. The International Labour Organisation (ILO) was established in 1919. Its main purposes are to contribute to the establishment of lasting peace by promoting social justice, to improve, through international action, labour conditions and living standards and to promote economic and social stability. Under the world employment programme, technology policy is seen as a major element in employment-oriented development policy and is specifically related to developing countries. This programme includes research for the development of specific guidelines for technological choice in developing countries in various economic sectors, so as to

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21/ The question of the harmful effects on human rights of the deterioration of the human environment as a result of scientific and technological developments is dealt with in the Secretary-General's reports prepared in pursuance of General Assembly resolutions 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments and 3150 (XXVIII) of 14 December 1973 on use of scientific and technological developments in the interests of peace and social development (see report on the protection of broad sectors of the population against social and material inequalities, as well as other harmful effects which might arise from the use of scientific and technological developments, A/10146, paras. 124-142, and report on the balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity, E/CN.4/1199, paras. 123-130).

promote the selection of techniques appropriate to labour market conditions in developing countries. Under the instructional technology-training systems programme for the development of appropriate skills, efforts are directed towards assisting member countries to apply new training technology in the development of workforce capabilities at national and institutional levels. The research and planning programme is concerned with varied aspects of the process of the transfer of technology by providing courses for managers, technicians and training officials and by research activities. The Research and Training Services Department of the ILO is carrying out work in the field of educational technology. 22/

25. The Food and Agriculture Organization of the United Nations (FAO) was established in 1945 with the main purpose of raising levels of nutrition and standards of living and of securing improvements in the efficiency of the production and distribution of all food and agricultural products. Under the conservation and development of land and water resources programme, multidisciplinary biometeorological research is being carried out, aimed at increasing the area under cultivation and facilitating the introduction of modern agricultural techniques on land already cultivated. The FAO is active in agricultural research in finding solutions to the problems of developing semi-arid areas. Considerable research work is being carried out also in the field of improvement of yield and yield stability of cereals and legume species. The FAO has launched an expanded programme for the exploration, conservation and better evaluation of genetic resources. Much attention is devoted to modernization of agricultural techniques which offers great scope for the application of science and technology to agro-allied industries and to improving the vital link between producer and consumer represented by the storage, transport, processing and marketing chain. The FAO also carries out technical studies to develop suitable equipment and manufacturing techniques appropriate to agro-allied industries for developing countries. High priority is given to the introduction of modern technology for pig and poultry production in developing countries and to the application of already known science and technology for the reduction of calf mortality and infertility. Under the programme of development and exploitation of forest resources the FAO places emphasis on the application of science and technology to conservation, including work on the quality of environment. Under the development and exploitation of fishery resources programme, research is carried out and efforts are made to apply existing knowledge to increase productivity of conventional marine fisheries, to develop unconventional resources and to expand agriculture. Together with the International Atomic Energy Agency the FAO assists countries in exploiting the potential of nuclear techniques in research and development to increase and stabilize agricultural production, improve food quality,

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22/ ILO, Draft Long-Term Plan, 1976-1981, doc. GB.192/PFA/10/1. Rights connected with aspects of employment are dealt with in the Secretary-General's reports on the impact of scientific and technological developments on economic, social and cultural rights, prepared in pursuance of General Assembly resolution 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments and subsequent resolutions of the General Assembly and the Commission on Human Rights (see E/CN.4/1115, paras. 1-102, and E/CN.4/1141) and in his report on the protection of broad sectors of the population against social and material inequalities, as well as other harmful effects which might arise from the use of scientific and technological developments (see A/10146, paras. 6-57).

protect agricultural products from spoilage and losses, and minimize pollution in food and the agricultural environment. 23/

26. The United Nations Educational, Scientific and Cultural Organization (UNESCO) was established in 1946 with the main purpose of contributing to peace and security in the world by promoting collaboration among the nations through education, science and culture. Its main activities in science and technology can be summarized as follows: assisting member States to develop science and technology policies for the advancement of knowledge and its rational use for development; helping to provide the infrastructure for training, research and the application of science and technology so as to develop the necessary capability to use the results of science and technology; ensuring that the world's store of information on science and technology is available to all member States and developing and helping to carry out major programmes of global concern in the sciences dealing with the environment (ecological, earth, water and marine). UNESCO's draft Medium-Term Plan (1977-1982) envisages a programme entitled "Investigation of interactions between science, technology and society, as well as of implications of scientific and technological change for man, within the context of the long-term development of science and technology in line with social progress and changing ways of life". This programme includes (a) three projects designed to study the implications for man of progress in frontier fields of science and technology; (b) two monographs concerning the problem of interaction between science and society; (c) four studies to examine the influence of new scientific disciplines and technologies on man's social condition and also encourage international organizations to orient their activities toward specific problem areas arising from this influence; (d) two studies on scientific and ethical problems. It also envisages organization of workshops and symposia on various problems related to the interaction between science, technology and society and on the most important implications for the future of mankind stemming from present-day discoveries in the natural sciences; and the convocation of a world congress on problems related to the human implications of scientific and technological advance, with special attention to be paid to these problems as they affect the developing countries. In respect of science and technology policies the following actions are inter alia envisaged: country surveys on the organization and performance of research units; convocation of symposia on the effectiveness of research units, on problems and methods of policy-making, planning and financing in the field of science and technology, and on deontological principles and norms governing the status, career and working conditions of scientific researchers in developing countries; and the publication of comparative country monographs on

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23/ The question of the impact of scientific and technological developments on the right to food is dealt with in a number of the Secretary-General's reports prepared in pursuance of General Assembly resolutions 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments and 3150 (XXVIII) of 14 December 1973 on use of scientific and technological developments in the interests of peace and social development (see reports on the right to food, E/CN.4/1084, paras. 12-57; on the protection of the public against harm from chemicals introduced into food production, processing, packaging and storage, E/CN.4/1172/Add.2, paras. 540-542, and E/CN.4/1172/Add.3, paras. 268-308; and on the protection of broad sectors of the population against social and material inequalities, as well as other harmful effects which might arise from the use of scientific and technological developments, A/10146, paras. 58-96). Paragraphs 12-57 of document E/CN.4/1084 were revised by FAO in paras. 6-53 of document E/CN.4/1198.

science policy and organization of research. In the field of scientific and technological research and training the draft plan includes strengthening or establishing regional networks of institutions for research and advanced training in science and technology in the various regions; establishment of an international co-ordinating body to identify priority areas and strategies for scientific and technological research; surveys on science and technology manpower planning, on the role of science in development, and on strategies for the training of high-level scientific and technological manpower; advisory meetings on the education and training of engineers and technicians. The draft plan also contains a programme of action in respect of general scientific and technological education. 24/

27. The World Health Organization (WHO) was established in 1948 to facilitate the attainment by all peoples of the highest possible level of health. The role of science in WHO is to chart the shortest and most economic paths from a lower to a higher level of health towards this final goal. Research activities of the WHO apply the spectrum of sciences (physics, chemistray, biology and sociology in particular) to problems of mental and physical health. Another component of WHO research is the field work undertaken world-wide in project areas where WHO teams provide technical assistance and participate in specific local studies such as testing new insecticides, carrying out epidemiological surveys etc. The principal objectives of the Sixth General programme for 1978-1983 adopted at the Twenty-ninth World Health Assembly on 13 May 1976 include:

(i) Development of comprehensive health services which include promoting primary health care, family health, mental health, workers' health, the development of standard health technologies and a more rational production, distribution, and utilization of safe effective and economic prophylactic, diagnostic and therapeutic substances.

(ii) Disease prevention and control including communicable and non-communicable diseases.

(iii) Promotion of environmental health including developing environmental health policies and programmes and the recognition, evaluation and control of environmental conditions and hazards which may affect human health.

(iv) Health manpower development including development of appropriate health personnel, to meet ghe needs of entire populations, and of relevant processes for basic and continuing education.

24/ UNESCO, General Conference, Nineteenth Session, Nairobi, 1976, Draft Medium Plan (1977-1982), document 19C14, pages 101-146. The question of the impact of scientific and technological developments on educational and cultural rights is dealt with in the reports of UNESCO on the problem of the preservation and further development of cultural values (A/9227) and on the impact of scientific and technological developments on economic, social cultural rights (see E/CN.4/1083, annex; E/CN.4/1144; E/CN.4/1196). See also the Secretary-General's report on the balance which should be stablished between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity, E/CN.4/1199, paras. 108-118.

(v) Promotion and development of biomedical and health services research, including identification of research priorities, strengthening national research capabilities, promotion of international co-ordination of research, promotion of the application and proper transfer of existing and new scientific knowledge and research methods to serve as a basis for the development of comprehensive national health services. 25/

28. The International Civil Aviation Organization (ICAO) was established in 1947 to study problems of international civil aviation, elaborate international standards and regulations for civil aviation and foster the development and planning of international air transport. The Air Navigation Commission is responsible to the ICAO Council for supervising, co-ordinating and reviewing the technical work prepared by world-wide meetings of States and by a number of panels of technical experts dealing with specialized subjects, such as visual aids, all-weather operations, airworthiness, the application of space techniques to aviation, and supersonic transport operations. All this activity is directed towards the improvement of air and ground services and facilities. The ICAO also produces and disseminates a series of publications including technical manuals; procedures for air navigation services, facilities and services documents; ICAO circulars containing specialized information; and a lexicon of terms used in connexion with international civil aviation, including data on scientific and technical subjects.

29. The Universal Postal Union (UPU) was established in 1874. Its main purpose is to secure the organization and improvement of the postal services, to promote in this sphere international collaboration and to render postal technical assistance to the members of the Union. In 1957 the Consultative Council for Postal Studies was established to promote the exchange of experience in the field of postal technology. The Consultative Council produces detailed technical studies on such topics as: the mechanization and automation of sorting for letter post; the mechanization of sorting for parcels and packets; mechanical equipment for large sorting offices; mechanical conveying of sacks, etc.; mechanization and automation of accounting procedures; the use of computers in postal services. Regional postal organizations seek to adapt the studies carried out by UPU to the particular needs

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25/ Sixth General Programme of Work covering 1978-1983 inclusive, WHO document A 29/6 and Corr. 1 and 2 and resolution WHA 29.20. The question of the impact of scientific and technological developments on the right to health is dealt with in the Secretary-General's report on the balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity, E/CN.4/1199, paras. 100-107. Aspects of health are also discussed in the Secretary-General's report on the protection of the human personality and its physical and intellectual integrity in the light of advances in biology, medicine and biochemistry (see E/CN.4/1172 and Corr.1 and Add. 1-3). These reports were prepared in pursuance of General Assembly resolution 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments and subsequent resolutions of the General Assembly and of the Commission on Human Rights.

of developing countries. With the support of UNDP, and its own special fund, UPU makes grants to postal officials from developing countries for training in the field of the mechanization of postal services. 26/

30. The International Telecommunication Union (ITU) was founded in 1865. One of the purposes of the ITU is to promote the development of technical facilities and their most efficient operation with a view to improving the efficiency of telecommunications services, increasing their usefulness and making them generally available to the public. A wide range of studies is carried out by intergovernmental study groups which provide an effective forum for the development and transfer of telecommunications science and technology on a global scale. The ITU contributes to the transfer of science and technology through technical assistance activities in providing advice to members concerning the development and exploitation of national and international telecommunications and plays an important role in the development of human resources by participation in training seminars. The International Frequency Registration Board undertakes technical studies concerned with the provision of radio frequencies for use in the telecommunications networks of developing countries, and provides training for engineers in radio frequency management. The Consultative Committees, in their work on standardization, provide the basis for technical specifications for national and international network development and exploitation. The Technical Co-operation Department of the Union provides experts to carry into the field in developing countries the knowledge and experience of the ITU for application in the training of telecommunications personnel and in providing assistance in the planning, management and exploitation of telecommunications systems. The technical co-operation is aimed at the promotion of development of telecommunications networks in Africa, the Americas and Asia, the strengthening of national telecommunication technical and administrative services in developing countries, and the development of human resources for telecommunication. The ITU participates in the work of United Nations organs or units concerned with science and technology and, in particular, prepares an annual report on telecommunications and the peaceful uses of outer space for submission to the Committee on the Peaceful Uses of Outer Space, and to the Economic and Social Council.

31. The World Meteorological Organization (WMO) was established in 1947 to facilitate world-wide co-operation in establishing networks of stations to provide meteorological observations and to further the application of meteorology to aviation, shipping, agriculture and other activities. The basic programme of the WMO is the World Watch Programme which is aimed at the establishment and improvement of a world-wide system for obtaining and exchanging meteorological observations and processed meteorological data. The principal aims of the

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26/ Concerning the interest of ITU in the study of human rights and scientific and technological developments, especially automation, see E/CN.4/1083, annex. The question of the impact of electronics, including automation, on human rights is dealt with in the Secretary-General's report on uses of electronics which may affect the rights of the person and the limits that should be placed on such uses in a democratic society prepared in pursuance of General Assembly resolution 2450 (XXIII) of 19 December 1968 on human rights and scientific and technological developments (see E/CN.4/1142 and Corr. 1 and Add. 1-2).

Global Atmospheric Research Programme are to increase knowledge of the behaviour of the atmosphere with a view to improving the accuracy of weather forecasting and to obtaining a better understanding of the physical basis of climate. The WMO is also embarking on a weather modification programme in which priority is given to a project aimed at obtaining scientifically convincing evidence as to the feasibility of artificially increasing rainfall amounts under specified conditions.

32. The Inter-Governmental Maritime Consultative Organization (IMCO) was established in 1948. One of the purposes of IMCO is to provide machinery for co-operation and exchange of information among Governments on technical matters affecting shipping engaged in international trade. The prevention and control of marine pollution programme deals with: measures to assist countries in implementing and enforcing the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, and the International Convention for the Prevention of Pollution from Ships, 1973; technical symposia and regional meetings to assist developing countries in providing shore reception facilities under the 1973 Convention and in developing schemes for combating spillages; standards and test methods for operational requirements of a sewage treatment plant; the development of guidelines for intervention under the 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties and the 1973 Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances Other than Oil; studies being carried out on the provision of facilities in ports for the reception of waste containing oil, noxious substances, sewage and garbage from ships; studies being carried out on procedures and arrangements for the discharge of noxious liquid substances; and evaluation, with advice from the Group of Experts on the Scientific Aspects of Marine Pollution of the hazards of harmful substances in the marine environment. So far as transfer of technology is concerned, IMCO has, with UNDP financial support, made an effort to expand significantly its assistance to developing countries in research and development programmes in shipbuilding and ship repair.

33. The World Intellectual Property Organization (WIPO), successor to the United International Bureaux for the Protection of Intellectual Property, became a specialized agency of the United Nations system on 17 December 1974. It is responsible for promoting creative intellectual activity and facilitating the transfer of technology related to industrial property to developing countries in order to accelerate economic, social and cultural development, subject to the competence and responsibilities of the United Nations and its organs and of other agencies within the United Nations system. 27/

34. The International Atomic Energy Agency (IAEA) was established in 1957 to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. The principal function of the Agency is the application of science and technology in the peaceful uses of atomic energy. Under the technical assistance and training programe the Agency aims to promote the transfer of skills and knowledge relating to the use of nuclear energy for peaceful purposes, to support efforts to carry out nuclear energy activities more effectively

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27/ The question of the impact of scientific and technological developments on author's rights is dealt with in the reports of UNESCO on the impact of scientific and technological developments on economic, social and cultural rights (see E/CN.4/1144, paras. 58-61, and E/CN.4/1196, chap. III).

and to ensure that the skills and knowledge transferred can continue to be applied after the provision of such assistance by the Agency has been completed. The broad objective of the food and agriculture programme is to foster applications of isotopes and radiation in food and agriculture within a joint programme of FAO and the Agency, supported by the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture. The objective of the life sciences programme is to foster the development of methods and techniques for the application of radio-isotopes in medicine and biology, special emphasis being placed on meeting the needs of developing countries. The physical sciences programme has the objective of stimulating research, fostering information and data exchange and co-ordinating the efforts of scientists from different countries in physics, industrial applications of isotopes, chemistry, nuclear data and isotope hydrology. The nuclear power and reactors programme provides integrated assistance to member States in the planning and implementation of nuclear power programmes for electricity and other purposes. The nuclear safety and environment protection programme ensures the safe utilization of nuclear energy and the protection of man and his environment from harmful effects of nuclear radiation and radioactive and non-radioactive releases from nuclear facilities. The objective of the safeguards programme is to apply safeguards under agreements to which the Agency is a party. The IAEA Laboratory provides support for the various technical programmes. 28/

28/ See foot-note to para. 5 concerning the question of hazards arising from atomic radiation.

III. INSTITUTIONAL ARRANGEMENTS FOR SCIENCE AND TECHNOLOGY

35. The question of institutional arrangements for science and technology was considered by the Economic and Social Council for the first time in 1969. In resolution 1454 (XLVII) of 8 August 1969 the Council, noting the growing involvement of the organizations of the United Nations system in the problems of the application of science and technology to development and the particular concern of developing countries for the transfer of technology, recognized the need for the reinforcement and co-ordination of present and contemplated activities, including the desirability of the establishment of an intergovernmental machinery in the field of the application of science and technology to development. Resolution 1544 (XLIX) of the Council, dated 30 July 1970, reiterated that need, attaching the highest importance to the strengthening of the activities (including the elimination of any prevailing institutional gaps) of the bodies and organizations of the United Nations system dealing with specific problems of the application of science and technology to development and with the question of the transfer of operative technology to developing countries.

36. At its second session in March 1974 the Committee on Science and Technology for Development (CSTD) adopted resolution B which requested the Secretary-General, through the Administrative Committee on Co-ordination, to prepare for the Committee at its third session a comprehensive report listing the various organs or units of the United Nations system dealing with science and technology, indicating the interrelationship between them and the distribution of broad responsibilities, major current programmes, presently available and projected resources among them. A similar request was contained in Council resolution 1905 (LVII) of 1 August 1974 entitled "Institutional arrangements for science and technology" under which the Council requested the Secretary-General, with the advice of the Advisory Committee on the Application of Technology for Development (ACAST) and after consultation with all interested agencies and bodies within the United Nations system, to make a study on: (a) the work at present being undertaken throughout the United Nations system in the field of the development and the transfer of science and technology, particularly in the interests of developing countries and (b) the feasibility of the establishment of a United Nations science and technology programme, including its form, functions and responsibilities, to assist, facilitate and ensure the application of science and technology to development, particularly that of the developing countries.

37. An Ad Hoc Working Group of the ACAST was convened in January 1975 to consider the implications of Council resolution 1905 (LVII) on institutional arrangements for science and technology. The Group came to the conclusion that the United Nations system as a whole, in spite of its many admirable activities in science and technology, had not yet fully responded to the challenge of the utilization of knowledge and the application of science and technology as one of the most important elements in helping the developing world in achieving its objectives of higher standards of living and better welfare conditions together with more equitable distribution of income. The Group emphasized the need for a better use of existing rssources for harmonization and the strengthening of the means to implement numerous proposals and resolutions both at the national and international level.

38. In view of these facts the Group considered it relevant to suggest the drawing up of a concerted and integrated programme for the application of science and technology to development in the developing countries. The main components of the United Nations science and technology programme, in the opinion of the Group, should be the following:

(i) The centralization of information on science and technology activities within the United Nations system;

(ii) A review and monitoring of science and technology developments in the world, of importance to both developed and developing countries, but, particularly, with the needs of the developing countries in mind;

(iii) The promotion of co-operation in matters of science and technology, either by multilateral agreements or through clearing-house arrangements;

(iv) Relationships with the world scientific community on a closer basis, both in developed and developing countries;

(v) Close co-operation with international and regional intergovernmental organizations outside the United Nations system involved with science and technology;

(vi) A greater awareness among governments of the problems, issues, policies and possibilities in the field of science and technology, which implies a need to organize, with the assistance of the appropriate international agencies or institutes, training programmes for government officials and others involved in scientific and technological programmes and development planning;

(vii) Assistance to the less developed countries to enable them to identify their science and technology requirements and to find projects worthy of support by the United Nations system. This could be done with the assistance of UNESCO and the co-operation of the regional commissions and would in many cases require the appointment in the individual country of a United Nations science and technology adviser;

(viii) The provision of scientific advice to the United Nations secretariat itself through small expert committees available on a continuing basis;

(ix) Harmonization of science and technology activities among the different agencies in the United Nations system. 29/

39. In the opinion of the Group, the first six points implied an improvement and expansion of the resources of the United Nations Secretariat to carry out the functions indicated. Item 7 required work by the Secretariat in conjunction with UNESCO and the secretariats of the regional commissions. Item 6, on training functions, could best be left to an agency such as the UNITAR in conjunction with UNESCO but required overseeing by the Office for Science and Technology of the United Nations Secretariat. Item 9 was not a matter merely for the Secretariat but rather for a new co-ordinating mechanism or body or at least for an improvement in the functioning of the Advisory Committee on Co-ordination's Sub-Committee on Science and Technology. The argument in favour of a strong governmental body was

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29/ Report of the Ad Hoc Working Group of the Advisory Committee on the Application of Science and Technology to Development, E/C.8/29, annex I, pp.4-5.

that it was necessary for the governments, and not only the representatives of the agencies, to take a close look at the whole picture of science and technology activities in the United Nations system and make appropriate recommendations. The Committee on Science and Technology for Development, which could be such a body, was not yet discharging the functions described above, due to its largely deliberative nature and to the fact that it met only biennially and because the bulk of the government representatives on it were not sufficiently qualified to deal with the application of science and technology.

40. The Group emphasized the necessity to mobilize the actions of governments and agencies in implementing projects relating to science and technology as suggested in the World Plan of Action for the Application of Science and Technology to Development, issued by the ACAST in 1971, and the importance for the United Nations system to take the initiative in helping governments, either individually or in groups of three or more, especially at the regional level, to carry out high priority projects that are indicated in this Plan, either directly or through the appropriate agencies of the United Nations system. To do this, the Group considered it necessary that a well-defined programme with appropriate funding should be set up, not linked to any particular agency, but operating in a fashion similar to that of the United Nations Environment Programme.

41. Such machinery should be an ultimate objective in the restructuring of the arrangements within the United Nations system. But a bare minimum was the harmonization of existing programmes and a strengthening of the Secretariat resources in order to provide the necessary information and services to all the agencies and especially to the governments interested in having a science and technology programme to facilitate and ensure the application of science and technology to development. In this respect the Working Group underlined the importance of establishing very close links between the secretariat of the Office of Science and Technology at United Nations Headquarters and the secretariats of the regional commissions through their science and technology units already established or about to be established. The regional commission secretariats, in the opinion of the Group, were in a key position to help governments to elaborate their proposals in terms of specific local and regional needs.

42. In accordance with the above-mentioned Economic and Social Council resolution 1905 (LVII) and CSTD resolution B, the Secretary-General prepared a report on institutional arrangements for science and technology. 30/ The report indicates two main possible approaches to an institutional programme in the context of the United Nations: a programme may be defined in institutional terms as in the United Nations Development Programme or United Nations Environment Programme, i.e. with a capital "P"; or it may be defined in the sense of a closely related set of well-co-ordinated activities, i.e. with a small "p". In both instances, the aim would be to promote to the utmost the application of science and technology to development particularly in the interests of developing countries. Thus every possible benefit would be sought from the decentralization of activities together with maximum unity of purpose and policy, while at the same time ensuring optimum harmonization and greater coherence, integration and co-ordination among the activities of the United Nations system.

30/ E/C.8/29 and Add.1.

43. The first approach implies setting up a special Programme which might include the following:

(a) A governing body responsible for over-all policy formulation and development and co-ordination of programmes;

(b) An analytical capability to define problems and priorities, identify programme interactions, formulate and evaluate programmes of multi-agency concern, and provide a substantive basis for co-ordination;

(c) The promotion of global, regional and country projects, as well as research studies and investigations;

(d) Mechanisms to improve the collection and analysis of information, both with respect to activities being undertaken within the United Nations system and outside it; and

(e) Liaison with United Nations organizations concerned, and with the international scientific community.

44. The report points out that science and technology as such cannot be compressed into a unified discipline, sectoral activity or a simple institutional arrangement. In the light of such considerations, the report concludes that a United Nations Science and Technology Programme, on the UNDP or UNEP model, would not necessarily meet the objectives envisaged in Council resolution 1905 (LVII) namely "to assist, facilitate and ensure the application of science and technology to development, particularly that of developing countries".

45. The second approach would be strengthening the existing machinery with the aim of enabling governments to provide better policy guidance with regard to the collective activities in the field of science and technology in the United Nations system so that those activities might achieve the most effective results especially for developing countries. It implied the following:

(a) The joint elaboration of a harmonized over-all policy for science and technology in the United Nations system;

(b) Strengthening the efforts of the specialized agencies and other bodies in science and technology, and the promotion of greater collaboration among them;

(c) Assisting the developing countries in solving practical problems arising in connexion with the transfer and application of science and technology and in developing appropriate technology where necessary.

To that end, there might be:

(a) An intergovernmental body;

(b) An expert advisory body or bodies;

(c) A secretariat with adequate financial resources; and

(d) An intensification of the use of science and technology and a "tightening-up" of interagency co-ordination throughout the entire United Nations system.

46. The report states that the Committee on Science and Technology for Development, with adequate staff support, could continue to serve as the intergovernmental body for the science and technology activities.

47. The ACAST could go on serving as the expert advisory body. The report stresses that this Committee has fulfilled a valuable function in the United Nations system; that it has not been fully effective is due largely to factors beyond its control, such as the failure to provide the necessary funds to implement its proposals, and the absence, until recently, of an appropriate political forum, the CSTD. Since the Committee is intimately concerned with the international arrangements and programmes of the United Nations system, its advice in this area could be made more useful, assisting the CSTD in reviewing key areas where several agencies or other United Nations bodies are involved. In view of growing concern with science and technology for development, the role of the scientific advisory machinery is likely to become more significant, particularly in relation to the proposed United Nations Conference on Science and Technology.

48. Secretariat services would be provided by the Office for Science and Technology. In this context, the main responsibilities of the Office for Science and Technology would broadly be:

(a) To provide secretariat services to the Scientific Advisory Committee, the Committee on Science and Technology for Development, the Advisory Committee on the Application of Science and Technology to Development and the ACC Sub-Committee, and, in particular, to prepare for the consideration of specific issues and to co-ordinate, or, as appropriate, execute the follow-up of the conclusions and actions of those three bodies, with the participation of specialized agencies and other components of the United Nations system concerned with science and technology;

(b) To collect and maintain up-to-date selected information on the activities and responsibilities of the specialized agencies and other organizations of the United Nations system concerned with science and technology;

(c) To collaborate with the specialized agencies and other components of the United Nations system concerned, in:

(i) Planning activities in the field of science and technology with a view to their harmonization and gradual integration within a United Nations science and technology policy framework, paying particular attention to the identification of needs and ranking of priorities. Agencies and other components of the United Nations system would be invited to contribute staff time to joint planning secretariats, within which the United Nations Office of Science and Technology would have an essential co-ordination function to fulfil;

(ii) Evaluating developments, trends and progress in science and technology and their application to development, in particular, the identification of gaps in the activities of the United Nations system in science and technology;

(iii) Examining and emphasizing, where appropriate, the key relationship between activities of the United Nations system predominantly in the field of science and technology, and activities in other areas, such as development planning and economic development.

49. Capacities for integrated analysis needed to be created at two levels to enable the Office to carry out its functions:

(a) At the United Nations Headquarters level, by increasing the professional capabilities of the Office for Science and Technology and by providing resources for the conduct of studies and research;

(b) At the level of the United Nations system, links between the various research institutes dealing with the application of science and technology to development should be strengthened and the establishment of a co-operative network of those institutes considered. Such a network would draw upon the expertise available within the United Nations system in providing an integrated analysis function. The network could considerably assist the build-up of a closely linked world-wide network of multidisciplinary research centres aimed at improving understanding of the optimal deployment of science and technology in the development process.

50. As far as co-ordinating is concerned, in order to make the work of the Administrative Committee on Co-ordination and its Sub-Committee on Science and Technology more effective, there might be considerable value in strengthening the machinery by having the Sub-Committee establish ad hoc working groups or task forces, or by having the ACC designate "lead agencies" on multisectoral subjects. This might facilitate more cohesive planning, control, evaluation and execution of activities in the field of science and technology. Further improvement could be achieved by encouraging joint planning between the various United Nations agencies concerned, in order to spell out in scientific and technological terms the general socio-economic development objectives which are to be sought after, as well as the obstacles which, it was hoped, could be overcome by means of the application of science and technology. This spelling out could be done in different ways and at different levels. For example, it could be done in an over-all manner within the framework of the International Development Strategy for the Second United Nations Development Decade and the efforts towards the establishment of a New International Economic Order. It could also be done with a narrower focus on selected problems, such as drought in the semi-arid zones and its grave consequences for the future of the populations of those regions. Similarly, this spelling out can take place at the world level; or else at a certain regional level (for example geographical, cultural or ecological); or again, as is indeed most frequently the case, at the national level. The United Nations and the organizations of the system should also further strengthen their links in the field of science and technology with the regional commissions.

51. In considering the report of the Secretary-General at its twenty-first session, the ACAST agreed that it constituted a clear and fair assessment of the situation and should be endorsed subject to certain modifications. In particular, the ACAST stressed the usefulness of organizing periodically joint meetings between the ACC Sub-Committee on Science and Technology and the CSTD, for instance on the occasion of the sessions of the latter, which would constitute a parallel arrangement with the joint sessions of the full ACC with the Economic and Social Council, but in the limited field of science and technology. It pointed out that for the links of the United Nations and the organizations of the system in the field of science and technology with the regional commissions to be viable and effective it is necessary to establish the science and technology units in the regional commissions or to

strengthen them where they exist. With regard to the two alternatives presented in the report, the ACAST unanimously favoured the second option, namely the strengthening of the existing machinery as suggested in the report. 31/

52. At the third session of the CSTD held in February 1976 there was a consensus of opinion in favour of the second alternative suggested in the Secretary-General's report. It was pointed out that science and technology in the context of development activities within the United Nations was a means and not an end in itself and that in view of their pervasive nature such activities should not be isolated in a single programme. It was stressed that there is a need to strengthen the co-ordinating machinery for science and technology and to provide additional and adequate financing for promoting science and technology for development, paying special attention to the needs of developing countries. Several delegations, while endorsing the need to strengthen the machinery for science and technology in the United Nations system, observed that in view of the impending preparatory process for the conference, it would be advisable to link efforts to that end closely with that preparatory process. Some delegations also emphasized the need for expanding co-ordination of national, regional and international activities. A number of delegations referred specifically to the importance of the functions and responsibilities of the Office for Science and Technology in any strengthened United Nations machinery and expressed support for its substantial reinforcement upon the request of the CSTD and of the Economic and Social Council. In that context, a number of representatives stated the need to include effective representation of developing countries in the Office. 32/

53. Changes in the existing machinery are proposed in the report of the Group of Experts on the structure of the United Nations system prepared in accordance with General Assembly resolution 3343 (XXIX). 33/ The report states that the present structure has not resulted in a real delegation of the Economic and Social Council's responsibilities to its subsidiary organs and that the Council, at the time when it considers the reports of its subsidiary organs, reviews once again the whole range of questions discussed by such bodies. Inasmuch as the meetings of all these organs must be scheduled long in advance, their agenda and documentation are often out of date when the meetings are held and, more importantly, their reports are often overtaken by events by the time they are reviewed by the Council. As a result, these bodies, as well as the Council itself, are often prevented from discussing issues of actual significance and interest. For all these reasons, the Group recommends that the Council assume direct responsibility for the work now performed by its existing subsidiary bodies. As a result, the permanent commissions and committees of the Council and in particular the CSTD, the ACAST and the Scientific Advisory Committee would be discontinued.

31/ Advisory Committee on the Application of Science and Technology to Development: twelfth report, E/C.8/30, 14 February 1976, pp.15-17.

32/ E/5777, paras.62-64.

33/ A new United Nations structure for global economic co-operation, E/AC.62/9, 28 May 1975.

54. Instead, to provide the United Nations in general and the Economic and Social Council in particular with ready access to the resources of the world scientific community, the Group recommends that small ad hoc groups of scientists be convened on a case-by-case basis to study specific problems and formulate recommendations which would then be taken into account by the Council in the formulation of relevant policies. The establishment of such groups, which would be based on rosters of scientists representing a wide range of scientific disciplines, would provide the Council with the necessary flexibility to deal, as appropriate, with diverse and constantly changing issues. The Group further recommends the appointment of a science adviser to the Secretary-General, who should be an individual of international eminence and recognized competence, to serve as a link between the Secretary-General and the world scientific community. His main function would be to provide timely advice to the Secretary-General to help him anticipate the impact of advances in science and technology and identify the options that their application presents, especially for the benefit of the developing countries.

IV. FORMULATION OF A SCIENCE AND TECHNOLOGY POLICY FOR DEVELOPMENT

55. On 10 August 1973 the Economic and Social Council adopted resolution 1826 (LV) concerning the role of modern science and technology in the development of nations and the need to strengthen economic, technical and scientific co-operation among States. The resolution, inter alia, urged developed countries and the competent organs of the United Nations system to intensify and increase their efforts to assist the developing countries to determine their strategies and priorities concerning the promotion of science and technology at the national level and invited the developing countries to intensify co-operation among themselves as a means to achieve scientific and technological self-reliance. In paragraph 7 of the resolution the Council considered that "the planning of activities in the field of science and technology in the various organizations of the United Nations system should be harmonized and gradually integrated into a United Nations science and technology policy". The CSTD was to be the focal point for the elaboration and continuing evaluation and assessment of this policy and the UNESCO, the UNCTAD and the ACAST were to co-operate with the CSTD in the fulfilment of this task.

56. The General Assembly endorsed these directives in resolution 3168 (XXVIII) of 17 December 1973. In the relevant part of the resolution, the Assembly:

> "4. Endorses further the idea of the need for the elaboration of a United Nations policy in the field of science and technology ...
>
> "5. Requests the Secretary-General to extend to the Committee on Science and Technology to Development all the necessary assistance in the implementation of resolution 1826 (LV)."

57. The CSTD at its second session in March 1974 defined its future work and agreed that it "should become the focal point for the formulation of a unified science and technology policy ...". It defined that "the indispensable conditions for the effectiveness of the science and technology policy in the United Nations must be:

"- The concentration of efforts on the main trends;

- The co-ordination of the science and technology activities of all United Nations organs and organizations concerned;

- Finding the optimum correlation between efforts at the international, regional and national levels;

- Taking account of the legitimate interests of all States of the world."

The CSTD indicated that a unified science and technology policy "might have the following medium-term objectives":

"(a) To single out the most significant problems and trends, both present and future, in the field of application of science and technology to development ...;

(b) To encourage at the national level the formulation and implementation of priority tasks in the field of application of science and technology to development which were of world significance ...;

(c) To define carefully and review problems relating to science and technology with which the specialized agencies and organs of the United Nations were concerned ... One of the most important functions of the Committee in all its work must be to study the programmes in the field of science and technology being implemented within the United Nations and to formulate recommendations concerning the co-ordination of these programmes with a view to enhancing their effectiveness." 34/

58. The Secretary-General appointed a consultant (Mr. E.E. Galal, Director-General, Drug Research and Control Centre, Egypt) to prepare a preliminary report on the scope of a science and technology policy for development for the United Nations system and the possible ways for formulating such a policy. 35/ The report advocated elaboration of a general framework policy defining principles and strategies for identification of targets, sources and modes of application of science and technology, and ways and means of co-ordination, harmonization or integration.

59. The question was considered by the ACAST at its twenty-first session in November 1975. The Advisory Committee agreed with the conclusions of the Committee on Science and Technology for Development on the three medium-term components of the science and technology policy in the United Nations system, made at its second session (see para. 57 above). The Advisory Committee also agreed that the World Plan of Action as well as regional plans embodied a detailed list of proposals concerning the problems and trends as well as the priorities.

60. In considering the consultant's report the Committee strongly supported his viewpoint that a policy for the United Nations system for the application of science and technology should not imply a monolithic approach to policy making or decision making. The Committee also felt that the needs and interests of the developing countries, as identified in the World Plan of Action as well as in the International Development Strategy for the Second United Nations Development Decade and General Assembly resolution 3362 (S-VII), should be the starting point of policy formulation as well as the implementation of these endeavours. Current activities in this field should be subjected to co-ordination at an early stage.

61. The Advisory Committee stressed the importance of identifying the role and responsibilities of Member States, both developed and developing, without whose contribution and continuing commitment the long-term policy sought for has no chance of meeting the demands of development. The Advisory Committee also felt that the outcome of the investigation in related fields currently being undertaken by the United Nations system, especially in respect of institutional arrangements for science and technology activities and programmes for the application of science and technology to development within the United Nations system, are bound to have a significant effect on the scope and strategies of a United Nations system policy in this field; so, too, do the national policies or approaches of Member States.

34/ Official Records of the Economic and Social Council, Fifty-seventh Session, Supplement No. 3, paras. 117 and 119.

35/ E/AC.52/XXI/CRP.10/Rev.1.

62. The Advisory Committee felt that the existing facilities and machinery rendered it unnecessary to initiate any new organization or institution at this stage for the formulation of such a policy in view of the current investigations of the needs of the United Nations system concerning structure and distribution of responsibilities.

63. The science and technology element of the education process in general, with particular emphasis on education and training appropriate to the specific needs of individual developing countries, should be an important constituent of a policy for the United Nations system. The Advisory Committee reiterated the importance of building up indigenous capacities as a basic prerequisite for any policy formulation and implementation. The importance of the formulated policy to deal with the problem of the "brain drain" was also emphasized.

64. The Committee decided to establish a continuing working group to develop the subject and to request ACC to nominate to that group three agency representatives to participate in the work, which would also require the continuing assistance of consultants. The group would be charged with the responsibility of making further studies of specific problem areas and mechanisms of formulating a United Nations system policy for the application of science and technology to development. The aim of the continuing group would be to formulate proposals for a science and technology policy, for consideration at the forthcoming United Nations conference on science and technology for development to assist the conference in achieving a declaration or resolution on the matter. 36/

65. The CSTD at its third session in February 1976 endorsed the comments of the ACAST and the follow-up action recommended by it. The following points were emphasized:

(a) The policy should identify specific priority issues, co-ordinating and progressively integrating the multisectoral inputs related to those issues;

(b) The required preliminary process of identifying crucial problem areas should be carried further to the stage of suggesting concrete approaches and strategies;

(c) National policy targets and current programme objectives should be clearly identified so as to provide a basis for over-all policy orientation;

(d) The legitimate interests of all countries should be taken into consideration with particular emphasis on the urgent needs of developing countries.

66. The importance of ensuring that the policy eventually formulated would not be launched from a platform of theoretical considerations only, but from the application of those considerations to current and planned sectoral and multi-sectoral programmes in the United Nations system was stressed; to that end the active participation of all bodies and organizations of the United Nations system was required.

67. The CSTD stressed that emphasis should be placed on the harmonization and gradual integration of the intended policy, rather than on unification. The policy to be formulated for the application of science and technology to development should reflect the social, economic and political facets of development problems.

36/ E/C.8/30, part III C.

The CSTD emphasized the importance of the concepts embodied in the resolutions adopted by the General Assembly at its sixth special session and at its seventh special session on action to establish the new international economic order, particularly with regard to transfer of technology and the strengthening of indigenous capacities in developing countries to apply technology effectively in their development programmes and the necessity to create and strengthen motivation to promote international co-operation, together with the political will to commit the required resources should also be stressed.

68. A simultaneous three-dimensional approach in the over-all area of science and technology and its application to development was recommended, through:

(a) the formulation of a general policy framework;

(b) the engagement and involvement of Member States at the proposed United Nations conference on science and technology, which should become a new starting point for major joint efforts;

(c) the overhaul and strengthening of the relevant institutional arrangement in the United Nations system.

69. The CSTD pointed out that, to proceed with the identification of the crucial problem areas and the alternative approaches and strategies required as essential inputs for the policy formulation process, use should be made of the Ad Hoc Working Group on Policy for Science and Technology within the United Nations system established by the Advisory Committee, which would develop the subject further with the participation of the agencies concerned. The policy formulation process should be fully integrated in the preparatory process for the conference.

70. At the first session of the Ad Hoc Working Group on policy for science and technology within the United Nations system established by the CSTD (see para. 64 above) held in July 1976 37/ it was agreed that the scope of the policy should be all-embracing, for instancing including social sciences. Constant attention should be given to maintaining an appropriate balance by concentrating on the contribution of science and technology policy to development objectives which were in a continuing process of being refined. The Group endorsed the view that the various international parallel exercises like the revision of the World Plan of Action and the preparation for the World Conference on Science and Technology for Development should be pursued in full concertation so as to bring about a unique multi-frontal attack.

71. The Group stressed the importance of the World Plan of Action. Whilst it could not be regarded as a perfect paper it still represented a comprehensive document which could be examined by the individual countries from the viewpoint of their needs and in consonance with their own value systems and aspirations. The World Plan of Action as formulated was, and when revised would be, very much more than putting together the programmes of the various Organizations of the United Nations system. It included in it in particular elements relating to education and training, the manner of identifying priority needs and appropriate technologies and the building-up of science and technology infrastructures. It also covered the interconnected elements between the programmes of various United Nations specialized agencies. A meaningful updated World Plan of Action

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37/ ACAST/WG.VI/4.

would form a document which in conjunction with a harmonized science and technology policy could point the way to changes in the institutional framework. The Group recommended that priority action should be taken on the revision and updating of the World Plan of Action in parallel with work related to institutional arrangements, the harmonization of science and technology policy, and preparations for the World Conference on Science and Technology.

72. The Group felt that if the work of formulating the policy was to be carried on effectively it was desirable that the United Nations Office for Science and Technology should be the continuing central point to be responsible for such activities as the servicing of the ACAST Ad Hoc Working Group, consultants, and eventual co-ordination and participation with the preparatory phase of the Conference. Special studies in selected areas should be entrusted to interagency task forces.

73. It was agreed that the conclusions of the Group would be incorporated in the Group's final report which should be a consolidated and concise paper. After approval by members of the Group the consolidated paper would be officially circulated to the concerned organizations of the United Nations system, in time for their comments to be available for simultaneous consideration by the ACAST at its next session, along with the consolidated paper.

V. FORTHCOMING UNITED NATIONS CONFERENCE ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

74. On 7 December 1970 the General Assembly adopted resolution 2658 (XXV) in which it requested the Secretary-General to prepare a study which would evaluate the main implications of modern science and technology, particularly for development, and, on this basis, appraise the results achieved within the framework of the United Nations system and the difficulties encountered in promoting science and technology and their application to development since the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, held at Geneva in 1963, and suggest additional forms of international action within the framework of the United Nations system, to ensure that scientific and technical achievements are more effectively applied to the needs of all countries, giving special consideration to the situation of the developing countries. In his report presented to the fifty-fifth session of the Economic and Social Council 38/ the Secretary-General, believing that the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas of 1963 had not been followed by the expected action, recommended that the Committee on Science and Technology for Development should give serious thought to the question of generating the necessary political will and action by Member States within the developing and developed areas of the world and multilaterally through the United Nations system. He suggested that the CSTD might wish to consider the merits of convening an international conference to focus on policies and a practical course of action at the national and international levels, adding that the scope of such a conference would differ from that of the 1963 Conference. The Council, in its resolution 1826 (LV) of 10 August 1973, requested the CSTD to examine the advisability of convening such a conference at the appropriate time.

75. The question of convening a United Nations conference on science and technology was considered by the CSTD at its second session in March 1974 on the basis of a note by the Secretary-General on the subject.39/ In that note, the Secretary-General took the view that the proposed conference should not be looked upon primarily as a meeting of two or three weeks but as a continuation of activities over a period of two or three years. It would consist of reviews of policies and decisions on co-operative action in science and technology taken at the national and regional levels in the developing and developed areas of the world. It should consist of ad hoc meetings or symposia at the world level on four or five principal subjects. The final conference, to be attended by representatives of Governments at the ministerial level, should be aimed principally at a final review and adoption of decisions brought together from the national and regional as well as special topic meetings. The CSTD recommended that the ECOSOC adopt a resolution to that effect.40/

76. Economic and Social Council resolution 1897 (LVII) of 1 August 1974 entitled "Question of convening a United Nations conference on science and technology" recognizing that the rapid pace of developments with respect to science and technology in general, as well as those having particular relevance for the developing countries, should be monitored and recognizing also the need to stimulate increased interest and action in the field of science and technology for development, emphasized the necessity of such a conference. This conference would be generally intended to survey

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38/ E/5238.

39/ E/C.8/25.

40/ E/5473.

methods of future action and would be carefully structured and concerned with only a few selected well-defined subjects. By this resolution the Council decided to convene in 1975 an inter-governmental working group of the CSTD to examine the specific objectives, topics and agenda of such a conference on the basis of the recommendations of the ACAST, the Intergovernmental Group on Transfer of Technology of the UNCTAD, the regional economic commissions and other United Nations bodies concerned.

77. The General Assembly, in its resolution 3268 (XXIX) of 10 December 1974, invited the CSTD, ACAST, UNCTAD, the regional commissions and other United Nations bodies concerned to take into consideration, in the preparatory work for the conference, the question of promoting human rights.

78. The intergovernmental group of the CSTD intended to consider inter alia the question of the proposed conference on science and technology was convened in April 1975. In the debate on this item, there was general agreement that the proposed conference, in contrast with the 1963 Conference on the Application of Science and Technology for the Benefit of the Less Developed Countries, should not be a "science fair" but should deal specifically with the application of science and technology to development and, more particularly, with development of the developing countries and with the interaction between available scientific and technological knowledge and the required institutions and political will to apply that knowledge in the development process. It was also recommended that representation should be at the decision-making, i.e. ministerial, level, to be accompanied by experts in various fields, as required. It was emphasized that the conference should be action-oriented and provision should be made for follow-up action. In this respect, many delegations felt that, in recommending action to be taken, the conference should differentiate between the needs of the various countries and regions, rather than try to attain a common global denominator, which would be too general for practical analysis and application. Most delegations felt that the conference should not merely be a two-week assembly, but should rather be the culmination of preparatory activities, at the national, regional and interregional levels. As for the nature of the preparatory process, there was general agreement that reviews of the application of science and technology to development should be held at the national level, on the basis of well-prepared studies to be submitted subsequently for consideration at the regional level. To ensure comparability of these studies, their preparation at the national level should follow guidelines to be set out by the preparatory committee of the proposed conference.

79. The group recommended to the CSTD the adoption of a draft resolution in which it was proposed that the main objectives of the conference should be the following:

(a) To adopt concrete decisions on ways and means of applying science and technology in establishing a new international economic order, as a strategy aimed at economic and social development within a time frame;

(b) To adopt effective means for utilization of the scientific and technological potentials in the solution of problems of development of national, regional and global significance, especially for the benefit of developing countries;

(c) To provide instruments of co-operation to developing countries in the utilization of science and technology for solving socio-economic problems that cannot be solved by an individual action in accordance with national priorities.

80. The group recommended the following agenda for the conference;

1. Science and technology for development:

(a) The choice and transfer of technology for development

(b) Elimination of obstacles to the better utilization of knowledge and capabilities in science and technology for development of all countries, particularly for their use in developing countries

(c) Methods of integrating science and technology in socio-economic development

(d) New science and technology for overcoming obstacles to development.

2. Institutional arrangements and new forms of international co-operation in the application of science and technology:

(a) Building up and expanding institutional systems in developing countries for science and technology

(b) Research and development in the industrialized countries on problems of importance to developing countries

(c) Mechanisms for exchange of scientific and technological information and experiences significant to development

(d) Strengthening of international co-operation among all countries and the design of concrete new forms of international co-operation in the fields of science and technology for development

(e) Promotion of co-operation among developing countries and role of developed countries in such co-operation

3. Utilization of the existing United Nations system and other international organizations:

Utilization of the existing United Nations system and other international organizations to implement the above goals in a co-ordinated and integrated manner

4. Science and technology and the future:

Debate on the basis of the report of a panel of experts to be convened on this subject.

81. As for the preparatory period the draft resolution contained the following provisions:

1. The preparatory period of the conference should be an integrated and fundamental component of the conference itself, through preliminary national and regional analyses of relevant socio-economic problems which can be solved with the help of science and technology;

2. A limited number of subject areas would be selected with a view to providing important matters for analysis and discussion of the issues listed in the agenda, on the basis of national priorities, through the preparatory process in accordance with the following criteria. The subject areas should:

(a) Be few, with a maximum of five;

(b) Be defined as problem areas with socio-economic implications that can be solved by utilizing science and technology;

(c) Require an integrated and interdisciplinary approach and an inter-agency approach;

(d) Have clear relevance to problems of development in all countries, especially developing countries, and should emerge from national priorities through regional consensus;

(e) Be clearly delineated and limited in scope.

The preparatory work should ensure that adequate data and practical analysis are made available by a thorough study by Member States.41/

82. The resolution adopted by the Seventh special session of the General Assembly (3362 (S-VII) of 16 September 1975) stressed among the objectives of the forthcoming United Nations Conference on Science and Technology for Development also the importance of strengthening the technological capacity of developing countries to enable them to apply science and technology to their own development.

83. Considering the question at its twenty-first session in November 1975 the ACAST stressed that the purpose of the conference should be to produce decisions and action by Governments, individually and in co-operation. To achieve this it was essential that at the final and highest level the participants should be ministers who carry the responsibility for planning and development in their Governments and who have authority to influence decisions on basic policy issues. But in the context of the conference the instruments of action are science and technology and it was therefore equally essential to ensure that the scientific community of all the countries taking part is intimately and actively involved in all phases of the preparations and in the conference itself. Such a close association between governmental decision makers and scientists was a sine qua non at the national level for the successful application of science and technology to development. The Advisory Committee emphasized that the conference should interpret "development" broadly. It should not be restricted to economic and social development in the technical sense but should embrace the need to realize to the full human aspirations for achieving the highest quality of life. The approach to the conference should therefore be on a multidisciplinary basis.

84. The ACAST pointed out that the topics selected for the conference should, as far as possible, be ones which are of concern to most, if not all countries. By way of illustration of possible problems for inclusion, the Advisory Committee mentions the following: appropriate sources of energy, fertilizer, food and human development, health, water management in arid or semi-arid zones, education, technology assessment, application of management science in development and the development of science and

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41/ E/C.8/28, para. 1.

technology policies. To ensure its success, the conference should intimately involve all the agencies of the United Nations system, and other international organizations with a direct concern for the application of science and technology to development. As far as the agenda proposed by the Intergovernmental Working Group is concerned, the Advisory Committee suggested that it might be preferable to start the conference with the item on science and technology and the future. This could then provide a framework in which the other matters requiring detailed decisions could be discussed.42/

85. At the third session of the CSTD in February 1976 there was an agreement that the provisional agenda for the conference proposed in the draft resolution be reformulated more precisely during the preparatory process and particularly subsequent to the regional meetings. It was also decided that a full reference to the objectives of the conference, as defined in General Assembly resolution 3362 (S-VII), section III, paragraph 7, should be included in the preamble of the draft resolution. Most delegations were in favour of holding the conference in the first half of 1979. Regarding the organizational structure for the conference, there was a consensus o that an intergovernmental preparatory committee was required and that the CSTD, modified if necessary, was the most suitable body to discharge that function. There was also general agreement that ACAST should serve as an expert advisory body throughout the preparatory process. Similarly, there was a consensus that all competent bodies and organizations of the United Nations system should be fully involved in that process. A compromise was achieved to the effect that there should be a mixed secretariat of the conference, composed of the Office for Science and Technology and competent personnel from UNCTAD, UNESCO and other bodies and organizations of the United Nations system. All the suggestions approved by the Committee were included in the draft resolution prepared by the intergovernmental group which was recommended for adoption to the sixty-first session of the Economic and Social Council.

86. On 4 August 1976 the Council adopted resolution 2028 (LXI) which incorporated the recommendations set forth in paragraphs 79-81 and 85 above. In addition the resolution requested the CSTD to act as the Preparatory Committee for the conference, while permitting participation on the part of all interested States. The resolution recommended that a Secretary-General be appointed at the earliest possible time to head a Secretariat of the Conference, to be composed of the Office for Science and Technology and of competent personnel from UNDP, UNIDO, UNESCO and other bodies and organizations of the United Nations system. It contained a request that, for the preparatory work leading to the Conference, the ACAST should advise the Secretary-General of the Conference and the preparatory Committee on matters pertaining to the Conference, and assist and collaborate at the request of the Secretary-General of the Conference in the preparation of the Conference at the regional level. The resolution invited Governments to participate fully in the preparation of the Conference. The General Assembly was recommended to decide at its thirty-first session to convene the Conference during 1979 in time for the General Assembly to take action in the light of the results of the Conference at its thirty-fourth session.

42/ E/C.8/30, annex II, pp. 1-2.