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PREPARATORY COMMITTEE FOR THE UNITED NATIONS CONFERENCE ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT
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Item 2 of the provisional agenda. Preparations for the United Nations Conference on Science and Technology for Development: (a) Progress report of the Secretary-General of the Conference: (i) Assessment of work at the national and regional levels

REPORT OF THE REGIONAL MEETING FOR WESTERN ASIA

CONTENTS

I. ORGANIZATION OF THE MEETING

1. The second regional preparatory meeting for the United Nations Conference on Science and Technology for Development convened by the Economic Commission for Western Asia was held at Amman from 12 to 15 September 1978, following a decision to extend the meeting by an extra day in order to cover the whole agenda.

Attendance

2. The meeting was attended by representatives of the following member countries: Bahrain, Democratic Yemen, Egypt, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, the Syrian Arab Republic, the United Arab Emirates and Yemen.

3. Representatives of the following Arab countries not members of the Commission attended the meeting as observers: Mauritania, Morocco and the Sudan. Observers from the following non-Arab countries not members of the Commission were also present: Austria and Romania.

4. The following Arab organizations were represented: the Abu Dhabi Fund for Arab Economic Development, the Arab Centre for the Study of Arid Zones and Dry Lands, the Arab Federation for Cement and Cement Products, the Arab Federation of Chemical Fertilizer Producers, the Arab Iron and Steel Union, the Arab Labour Organization, the League of Arab States, the Arab League Educational, Cultural and Scientific Organization, the Arab Organization for Standardization and Metrology, the Arab Telecommunications Union, the Arab Planning Institute, the Federation of Arab Scientific Research Councils and the Industrial Development Centre for Arab States.

5. The Deputy Secretary-General of the United Nations Conference on Science and Technology for Development participated in the meeting.

6. Representatives of the following organizations of the United Nations Secretariat attended the meeting: the United Nations Conference on Trade and Development (UNCTAD) and the United Nations Industrial Development Organization (UNIDO). The United Nations Development Programme (UNDP) was represented, as was the Advisory Committee on the Application of Science and Technology to Development. The meeting was also attended by representatives of the following specialized agencies: the Food and Agriculture Organization of the United Nations (FAO) and the World Intellectual Property Organization (WIPO).

Opening statements

7. His Excellency Dr. Hanna Odeh, President of the National Planning Council, representing the Jordanian Government, opened the meeting. In his opening statement, he stressed the role of science and technology in the development process and referred to the preparatory work of the United Nations Conference on Science and Technology for Development as a useful tool for studying the ways and

means through which national scientific and technological potentials could be used, oriented and developed. The speaker also indicated that there was a need for priority determination in science and technology, a more effective use of the national potential and building up of the scientific and technological infrastructure. Dr. Odeh indicated that skilled Arab manpower was the principal factor in the absorption and development of technology. In that connexion, he outlined the importance of the brain-drain problem and reiterated the suggestion made by His Royal Highness Crown Prince Hassan concerning the creation of an international labour compensatory facility, whereby funds would be allocated for the training of additional manpower in the labour-exporting countries. Regional co-operation, he added, also included the co-ordination of scientific and technological activities among scientific research organizations through the division of labour, the exchange of information and the orientation of all efforts towards regional problems. Dr. Odeh indicated that the concept of the establishment of an Arab Regional Centre for the Transfer and Development of Technology reflected a strong will to strengthen regional co-operation in science and technology. Jordan, at previous technical meetings as well as at the United Nations Conference on Technical Co-operation among Developing Countries, had supported the idea of establishing such a centre.

8. The Executive Secretary of ECWA welcomed the President of the National Planning Council, the Deputy Secretary-General of the United Nations Conference on Science and Technology for Development and the participants, and expressed his gratitude to the Government of Jordan for acting as host to the meeting. He emphasized the historic nature of the meeting which would help to determine the position to be adopted by the member States on the items for discussion at the United Nations Conference on Science and Technology for Development. He also stressed the crucial need for the transformation of the region from a state of technological dependency to a state of self-reliance, and pointed out that, despite the execution of productive projects, the establishment of scientific and technological institutions and the training of technical cadres, self-reliance in scientific and technological activities was not being advanced. The countries of the region, he said, needed to devote more effort to scientific research in areas that might not be of the same degree of concern to the developed countries, whose circumstances were different. As far as the issue of the transfer of technology and the liberation from technological dependency was concerned, however, the basic problem was tied to the engineering profession. Of the three major channels through which technology was transferred - machinery and equipment, engineering and skilled labour - the engineer occupied the central position. Given that fact, he advocated the idea of producing more multidisciplinary engineers, or generalists. He then noted that the main purpose of the meeting was to adopt a regional position on the problem of putting science and technology to work on the optimum achievement of socio-economic progress in the region, referring to the draft regional paper prepared by ECWA for that purpose. The paper analysed the subject, identified the obstacles and posed the solutions that, if implemented, would secure, in his view, a climate appropriate to the achievement of the desired objective. The paper included recommendations for measures that needed implementation at the national, regional and international levels. Finally, referring to the role of ECWA in the Arab world as a whole, he expressed his belief

that it was no longer possible to deal with the scientific and technological problems of the ECWA countries in isolation from their counterparts in the Arab Maghreb, a situation that had led the ECWA secretariat to invite, in co-operation with the Economic Commission for Africa (ECA), representatives of the Arab Maghreb States to attend the meeting.

9. In his statement, the Deputy Secretary-General of the United Nations Conference on Science and Technology for Development reported to the meeting on the progress achieved in the Conference preparations. He subsequently indicated that an analysis of various national papers was being undertaken in order to extract the recommendations on which the draft programme of action would be based and stressed the importance of the regional reports and recommendations as regional inputs to the aforementioned programme of action. Quoting directly from a speech that the Secretary-General of the Conference had intended to make at the meeting, the Deputy Secretary-General mentioned five important points connected with the objectives of the Conference: (a) the two aspects of technology; (b) the process of public participation; (c) the search for the common interest; (d) the need for a new type of negotiations; and (e) science, technology and culture. Concerning the two aspects of technology referred to above, the Conference, he added, should make it clear that technology could be regarded first as property to be acquired and secondly as the fruit of a specific economic, social, political and cultural system and as an integral part thereof.

10. As far as the process of public participation was concerned, he emphasized that science and technology emerged from each society within a cultural and historical context based on values and interests peculiar to that society. He also added that, since science and technology constituted a means of achieving certain social, political and cultural objectives, social debate was essential to the selection process. He then turned to the search for a common interest and stressed that it was in the interest of both the developing and developed countries that the scientific and technological development of the developing countries should take place, as it would create a strong and stable negotiating partner for the developed world. He also pointed to the need for a new type of negotiations and outlined the role of science and technology as a phenomenon of political importance capable of making a profound positive or negative impact on culture.

Election of officers

11. The meeting unanimously elected Dr. Hanna Odeh (Jordan) as Chairman, Mr. Wathik Chahid (Syria) as Vice-Chairman, and Mr. Mazin Adil Bakr (Iraq) as Rapporteur.

Agenda

12. The meeting adopted the following agenda:

1. Opening of the meeting

2. Statement by Dr. Hanna Odeh, President, National Planning Council of Jordan

3. Statement by Dr. M. S. Al-Attar, Executive Secretary of the Economic Commission for Western Asia

4. Statement by Mr. Guy Gresford, Deputy Secretary-General of the United Nations Conference on Science and Technology for Development

5. Election of officers

6. Adoption of the agenda

7. Organization of the work of the meeting

8. Review of national and joint Arab activities and national papers

9. Draft regional report

10. Other business

11. Adoption of the report

12. Closure of the meeting

II. REVIEW OF NATIONAL AND JOINT ARAB ACTIVITIES AND THE NATIONAL PAPERS

(Agenda item 8)

13. A number of the participants reviewed the activities undertaken in the context of joint Arab efforts for the United Nations Conference on Science and Technology for Development. The participants also described the intensive efforts made by Arab Governments and organizations in holding meetings at the regional and the country levels on the application of science and technology to development. Among these were the country meetings held in Kuwait, Jordan and Iraq, the meeting called by the Federation of Arab Scientific Research Councils at Baghdad in May 1978, and meeting of the Conference of Ministers of Arab States Responsible for the Application of Science and Technology to Development, held at Rabat in August 1976.

14. One participant reiterated the importance of a step-by-step procedure, which might start with a series of joint sectoral seminars in which the technological aspects of different sectors, such as industry, agriculture etc., could be discussed in detail, followed by specialized meetings to analyse the status quo and the different needs before formulating an Arab regional paper for the United Nations Conference on Science and Technology for Development. It was pointed out that such a paper might be the subject of unified action to be presented in an approved form to the Conference. The idea of formulating a technological plan on a pan-Arab scale for the year 2000 ought to be considered.

15. The representative of the Industrial Development Centre for Arab States pointed out that joint efforts had been undertaken and that steps had been taken

to co-ordinate the activities of the secretariat of the Arab League, its specialized agencies, and other organizations concerned.

16. It was pointed out also by the representative of the Arab League secretariat and the Arab League Educational, Scientific and Cultural Organization, and by the representative of the Federation of Arab Scientific Research Councils that a decision had already been taken to formulate a co-ordination and follow-up committee composed of representatives of the Arab League secretariat, the Federation of Arab Scientific Research Councils, the Council of Arab Economic Unity, the Industrial Development Centre for Arab States and the Arab League Educational, Scientific and Cultural Organization. The responsibility for preparing a comprehensive study on the status of technology in the Arab World was given to the latter Organization.

17. It was foreseen that national papers would be made available to a preparatory committee for review and comment, while specialized seminars would be convened to provide the background for a unified plan of action. This might take place during a conference to be called for by the secretariat of the League of Arab States and the Federation of Arab Scientific Research Councils. The aim would be to prepare an over-all Arab strategy within the context of the strategies of the developing countries for submission to the United Nations Conference on Science and Technology for Development.

18. In pursuing the programme, preparatory meetings of the assigned task force would convene to draw up a plan of action. Further meetings were expected before a final plan of action within the context of the Conference would be drawn up.

19. It was decided that the national papers would not be presented, and that the important points raised therein would be discussed in the context of the regional report. Nevertheless, the delegations of Jordan and Yemen presented a summary of a number of points appearing in their respective national papers.

20. In presenting the national paper of Jordan, the delegation reviewed briefly the stages of development attained by the country with respect to the planning and development of technological capabilities. While stressing the need for further progress, the representative of Jordan outlined briefly the achievements and short-comings of previous efforts. Thereupon, the national paper of Yemen was briefly summarized by that country's representative, who also presented the recommendations of his country for the Conference.

21. In the course of the discussion that followed, some representatives briefly summarized the major issues raised in their national papers and expressed their views on a number of recommendations that seemed to be similar. During the discussion of country activities, attention was directed towards the desire of the Governments and organizations of the Arab countries that science and technology should be applied to socio-economic development objectives and to raising the standard of living of people everywhere in the interest of the welfare of mankind and the promotion of world peace.

22. The representatives of some of the regional and international organizations expressed their views on the major issues raised by the national papers and on those related to regional efforts. The representatives of UNCTAD, UNIDO, FAO and WIPO reviewed their organizations' efforts and contributions and expressed their views on the transfer of technology.

III. DRAFT REGIONAL REPORT

(Agenda item 9)

23. The draft regional report of ECWA for the United Nations Conference on Science and Technology for Development (E/ECWA/NR/CONF.2/11) was introduced by the Chief of the Natural Resources, Science and Technology Division of ECWA. To open the discussion, the highlights of the paper were summarized and the main points were presented briefly.

24. In discussing the contents of the paper, most of the representatives made observations on the information contained in the section dealing with the general characteristics of the region and the views expressed in the paper regarding the status of technology. A number of participants noted that the regional report, which should have been based on the national papers, did not take them into consideration. Commenting on this, the secretariat indicated that the regional report and the national papers had been prepared simultaneously for submission to the Conference. The regional report employed a different analytical approach and relied on the findings of the field missions to the countries concerned, so as to reflect the regional viewpoint on the status of technology.

25. Some representatives commented on the information that needed clarification and on the degree of detail called for. Others presented their views on recent technological achievements in the region and on the need to describe them briefly in the report.

26. In reviewing the recommendations contained in the paper, a lengthy discussion took place, which resulted in many changes and additions. Relevant views expressed by the delegates were noted and incorporated in the final revised draft. The participants stressed the need for careful attention to the linguistic format of the Arabic text of the final draft.

27. The meeting approved the revised ECWA regional report for the United Nations Conference on Science and Technology for Development (E/ECWA/NR/CONF.2/L.2) after the amendments and recommendations had been incorporated therein.

IV. OTHER BUSINESS

(Agenda item 10)

28. The meeting adopted a resolution on the pursual of preparations for the United Nations Conference on Science and Technology for Development (see annex I below).

V. ADOPTION OF THE REPORT OF THE MEETING

(Agenda item 11)

29. The meeting adopted its report and the ECWA regional report on 15 September 1978.

VI. CLOSURE OF THE MEETING

(Agenda item 12)

30. After closing statements by the Chairman of the meeting and the Executive Secretary of ECWA, the Chairman declared the meeting closed.

Annex I

RESOLUTION ADOPTED BY THE ECONOMIC COMMISSION FOR WESTERN ASIA ON 14 SEPTEMBER 1978

Pursual of preparations for the United Nations Conference on Science and Technology for Development

The Regional Preparatory Meeting for the United Nations Conference on Science and Technology for Development,

Recalling the provisions of paragraphs 4, 5 and 6 of General Assembly resolution 32/115 of 15 December 1977,

Considering that the postponement until 1979 of the third session of the Preparatory Committee for the Conference will delay the programming of further preparatory activities needed for the Conference,

Considering the recognized need to strengthen the role of the regional commissions and to provide them and the Conference secretariat with the necessary financial and human resources to enable them to carry still further the activities in the field of science and technology which constitute their contribution to the preparatory process of the Conference,

1. Requests the General Assembly at its thirty-third session (September-December 1978) to give due consideration to and to adopt decisions on the following matters:

(a) The analytical progress report by the Secretary-General of the Conference on the state of preparation of the Conference;

(b) Allocation of funds necessary for the full implementation of the national regional and interregional activities as foreseen by the Secretary-General of the Conference;

2. Urges all States to take all necessary measures to make positive contributions to the preparatory work of the Conference and to continue to extend their full co-operation to the Secretary-General of the Conference in carrying out the responsibility of co-ordination invested in him by the General Assembly (resolution 32/115, para. 7);

3. Requests the Secretary-General of the Conference and the appropriate organs of the United Nations to take the necessary steps to ensure that the principle of equitable geographic distribution, particularly with regard to staff at the level of principal officer and above be fully implemented, in accordance with the pertinent resolutions of the General Assembly and the Economic and Social Council.

Annex II

RECOMMENDATIONS FOR ACTION ADOPTED BY THE ECONOMIC COMMISSION FOR WESTERN ASIA

(Amman, 12-15 September 1978)

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IV. OPPORTUNITIES FOR CHANGE AND RECOMMENDATIONS a/

Over the past two centuries many nations have attempted to acquire an adequate technological capacity. From the experience of those who succeeded and those who failed a great deal has been learnt about the nature of these processes. It appears that the attainment of a satisfactory measure of self-reliance in science and technology is the product of the strong sustained inner effort of the community. The level and type of technology prevailing in a particular society reflects its political economy. Developing nations face considerable difficulties in shifting their political economy to one that favours self-reliance in science and technology. The Arab region faces difficulties common to all the least developed among the developing countries (LDCs), yet at this juncture of its economic history the region enjoys three important assets that may be put to advantage: a good supply of financial, energy and manpower resources. Considerable effort is required to harness these assets, for it is clear from history that these assets do not spontaneously effect technological change.

The recommendations are presented under four headings: the first is at all of the national, regional and international levels, the second is at the national level, the third at the regional level and the fourth at the international level. It must be emphasized here that the national level is the most important and the most critical for all countries of the region. The regional level has a number of key features that have attracted the attention of Governments and planners alike. The nations of the ECWA region - as well as the entire Arab world - enjoy complementary characteristics that could be the basis for sound and effective programmes of regional co-operation. Unfortunately, to date all aspects of regional co-operation have been rather marginal when compared with co-operative activities undertaken by the States of the region with the non-Arab world. A policy of technological self-reliance must necessarily involve a greater measure of regional co-operation.

The difficulties experienced by regional programmes or agreements often arise from a weak national base. It is somewhat easier for the individual States of the region to undertake national rather than regional programmes. Thus emphasis in the recommendations has been placed on strengthening the national base in science and technology. Fortunately, a wide range of opportunities presents itself to all the States of the region.

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a/ Excerpt from the report of the second preparatory regional meeting convened by ECWA at Amman from 12 to 15 September 1978.

The recommendations below are designed to overcome one of the major obstacles to the better utilization of science and technology in development. The absence of adequate functional and integrative relationships between firms, ministries, policies and the institutions of science and technology is one such fundamental obstacle. For this reason there is a considerable emphasis in the recommendations on the strengthening of existing technological institutions, the generation of relevant information and the development of new approaches to project planning and execution.

IV.1. Recommendations applicable to all three levels

There are five general recommendations that are applicable to the national regional and international levels. It is recommended that:

IV.1.1. The Arab States, ECWA, the Arab League Educational, Cultural and Scientific Organization (ALECSO), the Federation of Arab Scientific Research Councils and the Conference of Ministers of Arab States Responsible for the Application of Science and Technology to Development (CASTARAB) undertake analytical studies of the work procedures practised by the bodies responsible for implementing national and regional resolutions on science and technology and the extent of their application to and impact on development; and that they also analyse the more recent experiences of the Arab States in the adoption and application of science and technology plans.

IV.1.2. Co-operation be encouraged between the relevant parties in the LDCs and the universities and scientific institutes of the more developed countries with the aim of directing the research and higher studies of students from the LDCs working at these universities and institutes towards the treatment of the scientific problems of the LDCs and their application thereto and away from the treatment of technological subjects relevant to the problems of the more developed countries and inapplicable to LDCs to which these students are affiliated; and that faculty members from the more developed countries be co-opted for work at the universities and specialized institutions of the LDCs in the field of scientific research.

IV.1.3. Efforts be deployed to implement the recommendations of CASTARAB on the transfer and application of technology to development made at the Rabat Conference of 1976, and the recommendations made by the seminar of the Federation of Arab Scientific Research Councils held at Baghdad in March 1978.

IV.1.4. The appropriate measures be taken at the national, regional and international levels to encourage the utilization and development of trained and skilled Arab personnel, especially in the scientific and technical fields; to stem the Arab brain drain; and to provide suitable employment and the essential facilities for skilled nationals in the countries of the region.

IV.1.5. The Arab States and Arab and international organizations support the activities of the professional associations of the Arab world in the achievement of their industrial development objectives by assisting them in the preparation of bulletins, publications and scientific, technical and statistical periodicals, in

manpower development, in vocational training within industrial establishments and in the conduct of technical studies and research in the areas of production.

IV.2. Recommendations at the national level

The States of the ECWA region are aware of the benefits of technology and their Governments are engaged in substantial efforts to acquire some of these benefits. But as discussed in section III, the expenditures and concerns devoted to the acquisition of finished products and direct benefits far outweigh the efforts exerted to acquire actual scientific and technological progress. Since the overwhelming portion, probably 98 per cent, of expenditure on development in the region is on national programmes, any significant changes in the region's technological capacities must depend primarily on national policies and efforts. Fortunately, the scope for national activities is fairly extensive.

The thrust of the national recommendations is to redress the severe imbalances in current national policies. The recommendations, given the practical will, may be implemented by all States of the region. The recommended strategy for strengthening the infrastructure of science and technology is based on the following: deeper awareness of problems and issues, information and the development of professional organizations, institutions and policies. All of these factors are interdependent. The measure of national determination is of course the sum total of national commitment to each of these factors. Each of these factors requires financial outlays. However, this cost is probably trivial in comparison with the high national cost that could be incurred if such a strategy were not pursued.

IV.2.1. Development of awareness and data-gathering

Science and technology require, above all, a highly conscious and well-informed society. To this end, it is recommended that:

IV.2.1.1. The necessary funds be made available to finance independent studies of past projects in order to evaluate the method of implementation followed.

IV.2.1.2. Efforts be made to develop a general awareness of the qualitative, quantitative and meticulous aspects of the data collection process; to compile a data bank on sound scientific foundations; to obtain comprehensive information on public and private projects and to put it at the disposal of decision-makers and those affected by their decisions.

IV.2.1.3. A technology unit be established devoted to the analysis of the effects that specific technology transfer strategies have on development policy.

IV.2.2. Character and scope of R and D activity

Two aspects of national research activity are of concern here - funding and management. National research centres cannot be expected to increase their contributions to the technological development of their respective States and the

region without first increasing substantially the level of national commitment to R and D activity to 2 or 3 per cent of gross national product (GNP) and without undertaking a major transformation of the current management practices of their research centres. So far, in no ECWA country has the national contribution to R and D activity reached the 1 per cent of GNP proposed by the World Plan of Action in the early 1970s. Furthermore, if R and D centres are to provide professional manpower with an effective working environment and if these centres are to acquire the necessary planning and managerial capacities to direct their resources to major issues, they must have well-informed and concerned governing bodies. These governing bodies should possess both authority and responsibility. Ministerial authority and responsibility should end at the level of funding and representation by one or more delegates on the governing body. Each institution should have the opportunity to evolve its own personnel policies, salary scale, career structure and administrative practices. Accordingly, it is recommended that:

IV.2.2.1. All countries increase their financial commitments to R and D to the point that will permit their respective centres for the application of science and technology to function optimally.

IV.2.2.2. All research centres be granted free access to foreign exchange to cover the cost of their purchases of books, periodicals, supplies and equipment.

IV.2.2.3. Every research institute publish a periodic report on the status of its research activity; that this report contain brief information on the institutions: the names and titles of all senior staff, date of founding, budget, a list of all employees by qualification, financial resources and facilities, an abstract of each research project in progress and an annotated bibliography of references and publications.

IV.2.2.4. A general body be created for the study of industrial projects and their effect on the environment and on people and the protection of natural, agricultural, mineral and water resources from industrial waste.

IV.2.3. The integration of national professional organizations, firms, institutes and policies

One of the major obstacles to the full mobilization of existing manpower and the institutional resources of LDCs is the disaggregated structure of the various communities involved in science and technology. In order to develop a structural unity among these various constituents, it is recommended that:

IV.2.3.1. All national professional organizations (engineering, medical, geological, teachers', etc.) be awarded by the State the necessary financial resources to develop library facilities, training and research workshops and professional seminars.

IV.2.3.2. Educational institutions undertake field studies of the performance of their graduates and determine the curricular implications of this performance.

IV.2.3.3. Joint training, study and research workshops among firms, ministries, professional organizations and university faculty be organized for each new major engineering project under consideration.

The purpose of these workshops should be to bring to the attention of the relevant professional communities the new technologies that may have to be utilized and/or introduced, to alert them to develop special training programmes and to identify the directions in which university teaching, research programmes, industrial facilities, resource use, etc. should evolve. These workshops should be of high technical quality and should be carefully organized.

IV.2.4. Strengthening research and graduate study at national universities

The alienating effects of foreign study can only be overcome through the development at the national universities of research work devoted to the solution of local problems in science and technology. It is recommended that:

IV.2.4.1. Priorities be set within the universities for the technologically relevant scientific activities related to development and other national objectives, in the light of the resources available to the country; and that the resources required by scientific activities related to the essential needs of the country be allocated adequately and with precision in the light of the country's short-term and long-term plans.

IV.2.4.2. Each university, college and research centre define its role in terms of the services it offers and the type of research it undertakes within the framework of a general mobilization of these institutions in the service of the country's development projects and, in particular, its development projects in the agricultural, housing, health and transport sectors and those related to the supply of food-stuffs and other human essentials.

IV.2.4.3. The universities be brought into involvement with the communities in which they live and that the necessary funding be provided for the conduct of research and studies that promote the development of a scientific and technological mentality in the community.

IV.2.5. Project design and technology

The intensity of technology is highest in the activities associated with the design and execution of projects, whether those are in civil engineering, agriculture or industry. The technology is often said to be embodied in the final product. It is more apt to say that the technology is buried in the final product for it is only marginally involved in operating the surface facilities. For example, the technology utilized in constructing a dam or harbour has little relevance to the operators of either. The design and execution phases of a project provide rich opportunities for effective technology transfer. Unless effective measures are taken to couple project design and execution to national and regional institutions, efforts in R and D and training may prove ineffectual. Hence, it is recommended that:

IV.2.5.1. Each Government establish a consulting office (or offices) and strengthen existing firms whose function is to conduct pre-investment studies and economic and technical project feasibility studies, including engineering design, and tender documents and to offer to those responsible for planning, implementation and financing, advice and recommendations concerning the technological opportunities available in the projects under study.

IV.2.5.2. National engineering consulting and contracting firms with system engineering and prime contracting capabilities be intensively developed and a clear distinction be made between national engineering firms and agents of foreign firms so as to concentrate support upon national institutions.

IV.2.5.3. Major public organizations, national industries and national development banks establish funds to finance the creation of additional jobs and programmes for specialized technical manpower at universities, R and D centres (national and regional) and major firms.

IV.2.5.4. Specialized workshops on project management and operation and on technology management be organized on a large scale for the purpose of training and retraining professional personnel within the context of each Arab country's administrative development plans.

IV.2.5.5. Each State review the technical competence of its national technical organizations and provide the necessary means to mobilize and strengthen this capacity to provide consulting, contracting and subcontracting services within the framework of a science and technology plan embodied in the country's national development plan.

IV.2.6. Technology and basic human needs

Out of 80 million inhabitants of the ECWA region, some 60 to 70 per cent of the population is believed to suffer from malnutrition, poor housing and a whole series of other hardships. To alleviate these hardships, science and technology provide a necessary input; but science and technology, by themselves, are not sufficient to solve these problems. The provision of basic human needs to such a large segment of the Arab population remains as a challenge to Arab society as a whole. All the recommendations under sections IV.2.1. to IV.2.5., if properly applied, will have to be concerned with the technological dimension of solving the problems of rural areas and the slum poor.

In order to associate the individual more intimately in these matters, it is recommended that:

IV.2.6.1. Over-all development plans and their science and technology components embody a stable and integrated socio-economic incentive system at the level of the individual, the establishment and the organization thus reflecting the Government's commitment to consider the reinforcement and extension of the applications of science and technology to development as a basic function of the individual, the institution and the organization.

IV.3. Recommendations at the regional level

The volume of transactions between the ECWA region and the rest of the world for the design and execution of engineering projects are presently on an extraordinary large scale - possibly of the order of $30 billion annually. The design and execution of these provide considerable opportunities at the regional level for technology transfer development, the promotion of self-reliance, employment, and project cost reduction. The national dimension has already been discussed. The recommendation (IV.3.1.1.) dealing with project design and execution constitute the driving force for the strategy presented in the regional report.

The Arab Regional Centre for the Transfer and Development of Technology (recommendation IV.3.2.) in the format presented in the ECWA proposal of 24 March 1978 (E/ECWA/NR/CTT/2/Rev.2) provides an important supportive role for such a strategy. Recommendation IV.3.3. deals with the strengthening of all Arab regional institutions involved with technology (for example, the Industrial Development Centre for Arab States (IDCAS), the Arab Centre for the Studies of Arid Zones and Dry Lands (ACSAD), ALECSO, the Council of Arab Economic Unity (CAEU), the Federation of Arab Scientific Research Councils, CASTARAB, and others). The expansion of the resources, services and facilities of these institutions will deepen Arab links and channels for co-operation and the transfer of relevant experience.

A set of recommendations is also proposed for establishing relevant data banks, for mobilizing existing informational resources and for establishing institutes and research centres in the Arab world.

It is, accordingly, recommended that:

IV.3.1.1. The States of the region singly and collectively endeavour to develop their capabilities in the design and execution of recurrent projects, particularly in the areas of civil engineering, petroleum and petrochemicals.

IV.3.1.2. The States of the region, through the public sector or the national private sector, jointly establish independent Arab corporations with sufficient resources to develop centres which, in addition to their industrial capabilities, would have capabilities in the preparation of feasibility studies, in design, in construction and in R and D activities.

IV.3.1.3. The Arab States - singly and collectively - establish in the public or the national private sector specialized project development, design and construction firms based on the region's oil, gas and petrochemical complexes and on agricultural enterprises.

IV.3.1.4. All new projects in the region include subcontracting and procurement clauses to apply to both the design and the construction phases, and that the precise restrictions to be introduced be made to depend on the technological capacity in the region as well as on agreements among the Arab States in this regard.

IV.3.2. The Arab Regional Centre for the Transfer and Development of Technology

It is recommended that:

IV.3.2.1. The Arab States willing to do so, establish the Arab Regional Centre for the Development and Transfer of Technology on the basis of the results of the special meeting held on this subject between 16 and 18 September 1978.

IV.3.3. Regional institutions

All Arab regional institutions concerned with science and technology directly (such as ACSAD, IDCAS, ALECSO, the Federation of Arab Scientific Research Councils and CASTARAB) or indirectly (such as the Arab Labour Organization (ALO) and CAEU) should be expanded in terms of resources and strengthened organizationally.

It is, therefore, recommended that:

IV.3.3.1. An increase of their budgets be sought before the end of 1979.

IV.3.3.2. The directors of these institutions be given more responsibility and authority, and the institutions be isolated from the political tensions of the region.

IV.3.4. Data and information

No development has taken place in the area of technology with the speed with which the information field has developed; the developing countries, however, have been generally unaware of this phenomenon. The impact of information on the development process in the different regions of the world is a vital subject, especially when the attempt of the LDCs to narrow the gap separating them from the more developed countries is taken into account. The LDCs would do well to benefit from the expensive and painful lessons they have experienced in the process of industrializing lest they fall into the same pitfalls when approaching the technology of information. Experience has shown that the transfer of technology and industrialization is not the simple, optimistic process conveyed intentionally or unintenionally to the LDC. There is no substitute for the meticulous planning of the private initiatives and the considerable, circumspect efforts that must be taken if the countless benefits and the positive influences of information are to be felt by the development process. This awareness led the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Inter-governmental Information Office to hold an international meeting to discuss strategies and policies for processing information and to determine the channels through which information can be made to contribute to socio-economic and cultural development. Several recommendations were made in this regard which the governmental delegations requested the Secretary-General of UNESCO to submit to the United Nations and to the United Nations Conference on Science and Technology for Development in order to increase the attention accorded this area of concern.

The bargaining power of the Arab States in negotiating contracts involving patents and licences may be considerably improved if data were available on the conditions of their use both in and outside the region. Furthermore, this data base would provide the Arab States with the documentation necessary to assess national practices and the way these respond to policy changes. These considerations led to the recommendations concerning the Arab Licence Registry.

The existence of large numbers of unpublished reports and studies in virtually all the Arab States, as well as the promising programme now under way at the Kuwait Institute for Scientific Research (KISR) led to the recommendation concerning the preparation and updating of the Regional Unified List.

It is therefore recommended that:

IV.3.4.1. Efforts be made to adopt a national information strategy and policy consonant with the science policy and the development policy of the country, so as to develop human potentials in the field of information at the regional level.

IV.3.4.2. A technical information and documentation centre be established devoted particularly to preparing and keeping a register of the licences, patents, contracts and projects in progress or under negotiation.

IV.3.4.3. The Kuwait Institute for Scientific Research Regional Unified List be extended to cover the entire ECWA region and to emphasize unpublished technical reports in economics, sociology and engineering.

IV.3.5. Popularization of science and technology

More and more States of the region now possess television and radio transmission facilities. Receivers are being more widely purchased and distributed. However, the production and diffusion of effective science and technology programmes to familiarize the population with basic health, environmental, agricultural, industrial and related problems are lacking. It is most important that a large variety of well produced and clearly explained documentaries be prepared to explain to the individual citizen the facts and wonders of his immediate natural and man-made environment. It is recommended that:

IV.3.5.1. National television and radio broadcasting organizations co-operate with ALECSO to prepare a large variety of these programmes addressed to the community and to individuals of different age groups and educational levels.

IV.3.6. Specialized regional institutes

The geographical distribution of natural resources in the Arab world and the technology that links together the operations for exploiting these resources economically, make it essential that applied research in this field take place in the vicinity of those resources. In order to avoid the dissipation of technological capabilities in the region, it is important to avoid the proliferation of centres and to concentrate on specialization so as to optimize the development of the region's capabilities.

It is therefore recommended that:

IV.3.6.1. The Arab countries co-operate with Arab national and regional professional associations and with ALECSO, the Federation of Arab Scientific Research Councils and CASTARAB in the conduct of detailed analytical studies of the mission, functions and production of research centres, so as to evaluate them, to assist them and to propose the establishment of new centres whenever necessary.

IV.3.6.2. The principles of division of labour and specialization be adopted in the Arab world as a means for facilitating the assimilation of technology and its application to development; that all specialized institutes established at appropriate locations by the Arab countries be supported, specialists be provided for its staff, and co-ordination and co-operation offered in its specialized field, thus avoiding the duplication of efforts.

IV.3.6.3. All the Arab countries adhere to the Paris Agreement on the Protection of Industrial Property with the aim of participating effectively in the design of policies for the protection of industrial property at the international level.

IV.3.6.4. Specialized regional institutes be established in different regions to engage in training and in basic and applied research on the natural resources characteristic to the respective regions - such as research institutions devoted to petroleum and natural gas, solar energy, fish resources and ecology.

IV.4. Recommendations at the international level

The countries of the region are engaged in international transactions on a wide scope. All these transactions contain important aspects of science and technology. At present, most of them are realized by the turn-key mode which does not include any of the important means of the transfer of scientific and technical knowledge. The recommendations in sections IV.2 and IV.3 required that the nations of the region abolish the current practice in designing and implementing projects by building the necessary national and regional capabilities.

The past 30 years have been characterized by a state of conflict and instability brought about by zionist aggression and the unleashing of negative forces on the Arab community. The consequence has been a heavy drain on Arab resources, which could have been allocated to the support and development of Arab regional capabilities in science and technology and which would have redoubled the contribution of the Arab States to the cause of peace and to the health of the world economy.

The international community can play an important supporting role on behalf of the proposed national and regional efforts. Negotiations in this area on aid, technical assistance, terms of trade and the operations of transnational corporations have been going on for several years under such titles as the North-South Dialogue, the Euro-Arab Dialogue, the United Nations Conference on Trade and Development (UNCTAD), the General Agreement on Tariffs and Trade (GATT), and others. The results

of all these efforts have been very disappointing to most third world countries. It is unfortunate that conflict and confrontation have often been emphasized at the cost of co-operation and stable and healthy development.

It is a fact that the means LDCs possess for dealing with transnational corporations are very limited. Thus developed countries could assist them by alerting, informing and advising them on the operations and profits of these firms.

The uncivilized stance of the more developed countries has widened the scientific and technological gap between the industrialized countries and the developing countries of the third world. The developed countries have affected ignorance of the role played by the technologies of the older civilizations and especially that played by Arab Islamic civilization in the basic sciences, upon which modern technologies were founded.

It is strange that while these countries refuse to recognize the right of the developing third world to progress and knowledge they demand that all natural resources, and especially those related to energy, be considered the property of mankind, and that they be permitted to benefit fully from their exploitation. They also endeavour to pass laws that prohibit the monopolization and use of natural resources for armament purposes.

It has therefore become essential to invite the technologically advanced countries to make an effective contribution to the technological and scientific resurgence of the developing countries of the third world.

It is accordingly, recommended that:

IV.4.1. Multinational corporations

IV.4.1.1. Organizations and bodies necessary for supervising and evaluating the activities of the multinational corporations be established to determine the extent to which their activities are consonant with the socio-economic objectives of the new world economic order, and the economic rights of States and the proposed code of conduct for the transfer of technology; that these be established at the national level in the recipient developing countries and the advanced countries concerned, as also at the regional and international levels; and that information and data be published and exchanged so as to secure the right of all Governments to have access to them.

IV.4.1.2. The relations between the multinational corporations, mother companies and their affiliates in the developing countries be monitored and regulated, as also all subcontracting activities in the technology transfer field so as to make the original owner of the technology accountable for all the commitments and responsibilities that accompany the benefits derived from its use, and so as to protect against increases in expenses and prices and attempts to shirk commitments and responsibilities.

IV.4.1.3. The relationship between mother multinational corporations and their affiliates and branches in the developing countries be regulated so as to guarantee

the genuine transfer of technology, the enhancement of self-reliance, the promotion of R and D activity and its linkage and contribution to national output in this field; that this be done by securing the right of horizontal and vertical proliferation of technology under terms that are compatible with socio-economic development in the LDCs and with the proposed code of conduct for the transfer of technology.

IV.4.1.4. Multinational corporations be obliged to certify their ownerhsip of the technology they transfer and to make available all the data, figures and other information on technology alternatives, on the elements of their technological service and any innovation or new development that may take place.

IV.4.1.5. Multinational corporations be obliged to give priority to local raw materials, intermediate products, technology and personnel, even when this would require an effort for their preparation.

IV.4.1.6. Multinational corporations be obliged to commit themselves to the vertical and horizontal integration of their contributions to technology transfer activities so as to make it progressively possible to produce locally the intermediate products and equipment needed.

IV.4.1.7. An international contribution be levied on multinational corporations in order to finance the most urgent international requirements of the LDCs in the application of science and technology for development.

IV.4.1.8. All declared and disguised monopolistic agreements between multinational corporations and LDCs or among themselves be combated so as to weaken their legal effectiveness with regards to developing countries.

IV.4.1.9. The relevant departments in the more developed countries concerned base their taxation of the multinational corporations on an accurate register of the financial transactions and the profits derived from their activities in the LDCs; and that this register be placed at the disposal of all countries.

IV.4.1.10. The negative role of the practices of the multinational corporations in the LDCs be exposed, together with the effect of these practices on the socio-economic development of each country and of the Arab world in general.

IV.4.2. Technology-exporting countries

The Meeting requests the following of the technology-exporting countries:

IV.4.2.1. That they give priority in the areas of co-operation, assistance and bilateral and multilateral agreements to that which serves the enhancement of self-reliance and the achievement of the maximum local self-sufficiency possible.

IV.4.2.2. That they help achieve the priorities and the socio-economic objectives of the development plans of the LDCs and their future development needs.

IV.4.2.3. That they agree to extend all types of technological co-operation through specialized local and Arab organizations and assume the responsibility of supervision, evaluation, and follow-up; and be linked with the country's comprehensive development process and committed to its objectives and priorities.

IV.4.2.4. That all agreements contain provisions for training and development and for supplying the data and information needed for the vertical and horizontal application of science and technology to sectoral development thus promoting integration and co-ordination with the remaining sectors.

IV.4.2.5. That they accept the indigenous leadership and management of all the co-operation and technical-technological assistance agreements that are selected by national Governments and leaders of the LDCs and that they provide the training and development that will enable them to implement these responsibilities.

IV.4.2.6. That each foreign consultant in the LDCs be accompanied by a local colleague to share his work and responsibility, and that priority be given to the nomination of foreign experts from other LDCs.

IV.4.2.7. That priority be given to national establishments and companies and to professional associations for the purpose of participation, the performance of auxiliary services and subcontracting work related to projects arising from bilateral or multilateral agreements with LDCs.

IV.4.2.8. That all commercial applications of research findings be considered the joint property of the countries participating in the research.

IV.4.2.9. That they observe the same rules and standards practised in their more advanced communities with regard to environmental protection, public security and worker safety in all their activities in the LDCs.

IV.4.2.10. That they treat their contribution to the development of the powers of innovation, creativity and adaptation in the LDCs as one of the fundamental objectives of all co-operation agreements with them.

IV.4.2.11. That the more advanced countries engaged in co-operation with the LDCs offer them financial and commercial facilities and encourage and even favour the export of their goods to the markets of the more advanced countries so as to assure continuing economic opportunities for the activities that employ science and technology in the LDCs.

IV.4.2.12. That they renounce the employment of political pressures and conditions when assisting LDCs in the application of science and technology to development, that they avoid discrimination among LDCs on political grounds and that they endeavour to create a natural market for the transfer of technology.

IV.4.2.13. That they offer effective financial and moral support to research, information and technology centres in the LDCs, which are in dire need of such support.

IV.4.2.14. That they try to remove the obstacles to the foreign trade of LDCs in the markets of the more developed countries in order to improve the foreign exchange position of the LDCs, which, in turn, would have a significant effect on the latter's ability to increase their investments in science and technology.

IV.4.2.15. That they stress the need for acquitting fully their commitments - especially their financial commitments to the LDCS as embodied in the International Development Strategy and in accordance with the new international economic order.

IV.4.2.16. That they employ the Arabic language in documents, in users' instructions and in machinery and equipment maintenance manuals, and that they issue recommendations in this regard.

IV.4.2.17. That their Governments announce their intention to pass the necessary legislation for assisting the developing countries in production, in science and in the accumulation of technological capabilities and the development of their professional set-ups.

IV.4.2.18. That they co-operate in combating desertification and in the reclamation of desert lands, marginal lands in particular.

IV.4.2.19. That they emphasize the rational use of natural resources, including energy.

IV.4.2.20. That they, along with all international finance institutions, review the criteria used in granting assistance and loans in support of scientific and technological activities in the LDCs, so that no country which achieves genuine accomplishments in the area of socio-economic development is excluded from access to such assistance and loans at normally favourable terms.

IV.4.3. Rectification of the structural set-up in the United Nations system which deals with the application of science and technology to development

The sequence of dealings with these uses must correspond and be consistent with the sequence followed in dealing with development requirements within the same organization. This requires the adoption of the following recommendations:

IV.4.3.1.1. That emphasis should be placed on the need for conformity between transactions, developmental requirements and their scientific and technological content with regard to the structural and sequential location of responsibility.

IV.4.3.1.2. That suitable priority should be given to the scientific and technological content of development plans as effective instruments for the achievement of socio-economic development goals in such a way as to benefit people and raise general living standards.

IV.4.3.1.3. That, in spite of the coherence and integration needed between

transactions involving development requirements on the one hand and scientific and technological content on the other, the independence and coherence of the course of transactions involving the scientific and technological content should not be impaired.

IV.4.3.1.4. That steps should be taken to ensure that member States fully meet their responsibilities with regard to the use of science and technology for peaceful purposes in connexion with the formulation of policy and strategy, the definition of priorities and evaluation and comprehensive transactions and ensure integration at the level of the General Assembly, the Economic and Social Council and the United Nations organizations and specialized agencies, as in the case of transactions involving other development requirements.

IV.4.3.1.5. That the extension of coherence and integration from transactions to the non-centralized components of the United Nations should be carried out in such a way as to ensure co-ordination and link-up at the level of planning, implementation and follow-up and their organizational, procedural and financial foundations.

IV.4.3.1.6. That the importance of the regional economic commissions and their prime role in achieving integration and coherence at the regional and the international level should be stressed; for this, it is necessary that the commissions be accorded the support required to discharge their responsibilities and functions, especially with regard to the achievement of socio-economic development goals.

IV.4.3.2. The formulation and co-ordination of a comprehensive policy for the United Nations system and the definition of its strategy and work programmes in connexion with the developmental uses of science and technology

In order for such a policy to benefit the developing countries it is recommended that the United Nations Conference on Science and Technology adopt the following objectives to ensure:

IV.4.3.2.1. That the scientific and technological content in achieving socio-economic development goals is effective.

IV.4.3.2.2. That the technological and scientific yield is successfully developed in the implementation sector in the developing countries without detriment to the co-ordination and integration needed with the yield in the other sectors.

IV.4.3.2.3. That the priorities and strategy for comprehensive and balanced development are adhered to at the national and regional levels.

IV.4.3.2.4. That co-ordination and integration capabilities are strengthened and developed in the case of United Nations bodies and also between them and their regional and national equivalents.

IV.4.3.2.5. That self-reliance is furthered both nationally and regionally in the field of policy making and planning whether at the level of the specialized sector or the level of comprehensive development.

IV.4.3.2.6. That effective, integrated incentive systems are created or strengthened for the authorities concerned with the use of science and technology for development and that this should include the authorities concerned in both the developing and the developed countries.

IV.4.3.2.7. That the self-reliance and scientific and technological potential of the developing countries are strengthened in requisite areas such as absorption, creation, development and implementation in accordance with socio-economic needs.

IV.4.3.2.8. That the environmental and private and public scientific and technological institutions in the developing countries are strengthened and supported.

IV.4.3.2.9. That their effectiveness and socio-economic suitability are ascertained with regard to the appropriateness of the socio-economic return on investment in the framework of the same project and at the level of comprehensive development plans.

IV.4.3.2.10. That the foundations of bodies concerned with the use of science and technology for development in particular, and developmental bodies in general, are strengthened.

IV.4.3.2.11. That they are effectively fed with the general input of data and information regarding the use of science and technology for development and the possibilities of implementation.

IV.4.3.2.12. That they effectively participate in the provision of training and instruction at all levels such as, for example, policy making, planning, management, implementation, follow-up, evaluation, assessing and forecasting socio-economic repercussions, creation and development.

IV.4.3.2.13. That they achieve co-operation, co-ordination and integration among the specialized sectors in the developing countries, with the other sectors engaged in the development process, among those already existing in various developing countries and also between them and their equivalents in the developed countries.

IV.4.3.2.14. That opportunities are provided for the successful implementation of the new international economic order and that they adhere closely to its objectives and policies and successfully contribute to the creation of an appropriate climate for international co-operation towards its achievement.

IV.4.3.2.15. That the methods of preparing and implementing them are consistent with the considerations, objectives and procedures laid down by the member States in connexion with the recommendations and resolutions for the

restructuring of United Nations development bodies and the international code of conduct for the transfer of technology.

IV.4.3.2.16. That the priorities, objectives, policies and work methods stipulated in the resolutions of the forthcoming United Nations Conference on Science and Technology for Development are put into effect.

IV.4.3.3. Other recommendations to the United Nations

IV.4.3.3.1. That the United Nations be requested to assist and enable the developing countries to obtain their full rights and financial resources through their foreign trade with the capitalist countries for use in applying science and technology to development.

IV.4.3.3.2. That the United Nations should encourage all the developing countries to utilize their human and financial resources for the application of science and technology to socio-economic development in their countries.

IV.4.3.3.3. That a 10-year world plan be formulated for the application of science and technology, with the aim of setting up Arab bodies to formulate science policies, determine ways of transforming science into technology and also establish regional training centres in the Arab East and the Arab West, together with Arab universities for the sciences, agriculture, industry, medicine, transport and communications.

IV.4.3.3.4. That a directory of developing countries be compiled containing model texts of licensing agreements based on international experience.

IV.4.3.3.5. That aid with regard to the provision of technical and scientific expertise in the field of the peaceful uses of atomic energy be increased.

IV.4.3.3.6. That a permanent international agency be set up to be responsible for transferring technology to the developing countries for purposes of socio-economic development.

IV.4.3.3.7. That the responsible authorities in United Nations bodies undertake studies of an international, regional and national nature on:

(a) The most effective ways of putting the Conference's final resolutions and recommendations into practical application.

(b) Methods of evaluating the progress achieved and the benefit derived by countries and regional and international organizations from the application of science and technology in accordance with these resolutions and recommendations.

(c) That the experience gained in this field be analysed and studied and that what is of obvious benefit in this respect be disseminated among the authorities who can profit therefrom.

IV.4.3.3.8. That the United Nations organizations and agencies endeavour, within their terms of reference and during the implementation of their programmes, to apply the final recommendations adopted regarding the application of science and technology to development and that, in carrying out their work and programmes, they should follow the most effective methods for the most suitable practical application of these recommendations and resolutions.

IV.4.4. Other international recommendations

IV.4.4.1. That relations and co-operation in the field of science and technology should be strengthened between the region and other regions containing developing countries, especially in the field of appropriate technology.

V. FOLLOW-UP ACTIVITIES

The momentum, gathered in the Governments and scientific communities of the region during the preparatory period for the United Nations Conference on Science and Technology for Development should not be allowed to die. ECWA can play an important role in supporting and participating in regional activities with a view to the implementation of the Conference findings and recommendations. It is, therefore, necessary to strengthen the Science and Technology Programme of ECWA in terms of financial and human resources to enable it to pursue the necessary follow-up activities. Some of these activities are, subject to availability of the necessary additional human and financial resources, suggested below:

V.1. ECWA is to organize a regional conference within four months after the completion of the Conference for the purpose of assessing the results achieved by the 1979 United Nations Conference, discussing their implications for the ECWA region, adopting the necessary measures for ensuring the implementation of Conference recommendations within a given time-frame and maintaining the momentum generated by the Conference in the ECWA region.

V.2. ECWA is to undertake studies on the use of science and technology, especially in the agriculture sector, and transport and communications in co-operation with other organizations and bodies.

V.3. ECWA is to undertake studies to identify short-comings and problems in Arab contracting practices in various civil engineering and technological areas and propose appropriate solutions with a view to utilizing local material and human resources.
