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DRAFT
INSTITUTIONAL MODEL FOR NATIONAL CENTRES FOR THE TRANSFER AND DEVELOPMENT OF TECHNOLOGY

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(Natural Resources, Science and Technology Division)

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CONTENTS

I. Introduction

1. Since the end of the Second World War, and particularly since the (1950s, the Arab countries - like other developing countries - have embarked to an increasing extent on development strategies and plans in order to achieve social and economic progress as rapidly as possible after winning their struggle for national independence.

2. In their strenuous efforts for modernization, they have had to depend largely on the import of foreign technology. The imported technology took various forms, including turn-key projects, machinery, services and even finished goods for consumption. It also entailed huge economic, financial and social costs. In this connexion, it is of prime importance to assess qualitatively and quantitatively the degree and character of the over-all socio-economic benefit acquired through technology transfer transactions, particularly as regards the building up of national innovative skills and production and development capabilities.

3. In the international arena, developing countries, including the Arab countries, have tried hard in many ways, and in various forms, to minimize the degree of their technological dependence, to strengthen their national capacities within more balanced development policies and with the objective of attaining self-reliance and to seek the establishment of a new international economic order on a basis of equity and mutual benefits with the industrially developed countries. Among such efforts, is the attempt to reach an applicable world agreement on an international code of conduct on the transfer of technology on fair and more justifiable terms, in the mutual interests of both the suppliers and the recipients of foreign technology. These efforts have naturally met great opposition on the part of the developed countries and particularly from the transnational corporations. Although many issues have not yet been resolved, a large measure of agreement has been reached in a number of important areas.

4. In order to help in formulating or advising on technology policies, in assisting in the preparation of technology plans and in the choice, evaluation, selection, acquisition, unpackaging, absorption, adaptation and assimilation of imported technology, in negotiations thereon and in the generation of indigenous technology, the United Nations Conference on Trade and Development recommended (resolution 87(IV)) "the establishment of appropriate institutional machinery, including a national centre for the development and transfer of technology, ... urgent attention being paid to defining the role and functions of such a centre, including the principal linkages which need to be established with other national bodies or institutions".

5. The Vienna Programme of Action on Science and Technology for Development, adopted by the United Nations Conference on Science and Technology for Development on 31 August 1979 and endorsed in General Assembly resolution 34/218 of 19 December 1979, referred in paragraph 68 to "such actions at the international level in providing assistance to developing countries in setting up suitable institutions to deal with the transfer of technology".

6. In this context, and in response to the request of the Government of Iraq, for the inclusion in the provisional agenda of the eighth session of ECWA of an item on the preparation of an institutional model for national centres for the transfer and development of technology, the present text has been prepared.

7. This draft institutional model should be open to discussion, amendment and modification by institutions concerned and by experts in ECWA member countries, in order that it may finally reach the most acceptable form. It is hoped that it will assist member States in establishing national centres and institutions, due recognition being given to the conditions prevailing in each particular case.

8. In this respect, it is worth referring to the assistance which could be rendered, on request, to member countries by the United Nations system, particularly by UNCTAD (Advisory Services on Transfer of Technology), WIPO, UNIDO, UNDP and the Financing System established in accordance with the Vienna Programme of Action on Science and Technology for Development.

II. Objectives of the Centre

9. The main objectives of the Centre are:

(a) To assist in the preparation of a national technological plan as an integral part of the national development plan, in the formulation of co-ordinated sets of policies for its effective implementation, including measures for organized processes of technology transfer and development, and in the strengthening of national technological capabilities;

(b) to assist in the study and improvement of the terms, conditions and costs of the transfer of technology;

(c) to provide access to technological information and services located within the country and the region and in the rest of the world;

(d) to organize training and exchange programmes in the areas of technology policy and planning, including the transfer and development of technology;

(e) to promote national, Arab, regional and international co-operation in the areas of the transfer and development of technology.

III. Functions of the Centre[1/]

10. To achieve its objectives, the Centre must undertake:

1. Assistance in the formulation of national policies for the transfer and development of technology

1.1 The Centre will assist in defining the national priorities and establishing fields of specialization in technology within national development plans in co-operation with institutions concerned mainly with national planning, economic and industrial development, research, design and development, as well as with other interested bodies.

1.2 It will assist in the co-ordination of the different levels of technological decision-making.

1/ See Annexes I and II below.

1.3 It will establish criteria for the import of technology in interrelated areas, including those concerning licensing arrangements, the transfer, adaptation and development of technology, industrial property laws and practices, foreign investment and research and development.

1.4 It will assist in reviewing applications for the import of technology.

1.5 It will assess the socio-economic and cultural implication of the transfer and development of technology and promote the understanding of such implications.

2. Planning for the transfer and development of technology

2.1 The Centre will assist in conducting integrated studies on technology planning and on the selection and choice of technology, with regard to the scientific, technological, political, economic, financial, managerial, labour, social and environmental elements and factors involved in both long-term and medium-term planning for over-all national, intra-sectoral and inter-sectoral technological development, with a view to decisions being taken at the macro-levels on the optimal technology mix within the framework of national development plans and priorities.

2.2 It will assist in conducting specific and feasibility studies on alternative sources of supply and on the selection, suitability, effectiveness, and direct and indirect costs of specific technologies for use in investment projects for certain sectors or subsectors, particularly in relation to the main elements of activity, in terms of policy requirements, demand, research, design, production, materials, marketing, management, finance, time, control, the environment and other elements involved in the transfer process, while maintaining the necessary balance between the specific nature of the technology and the relative levels of capability of both local and foreign enterprises, with a view to decisions being reached at the macro-levels on the optimal technology mix.

2.3 It will promote and conduct specific studies and case studies on questions concerning the effective transfer of technology, mainly those connected with:

(a) Techno-economic unpackaging;

(b) The absorption, adaptation, diffusion and development of technology;

(c) Direct and indirect costs of imported technology;

(d) National resources and capabilities, including indigenous scientific and technological capabilities in research and development, design and engineering, particularly in relation to the production system;

(e) The evaluation and assessment of technology in various sectors and subsectors, including methodologies developed for studying the effectiveness of technology transfer;

(f) Relationships between government and enterprises;

(g) Managerial capabilities within enterprises;

(h) Labour and employment conditions, problems and skills;

(i) Market and technological relationships.

2.4 It will provide advice and assist in project preparation, assessment and cost/benefit analysis.

2.5 It will assist in conducting studies on the promotion and development of local and traditional technologies.

2.6 It will co-operate in monitoring current and forecasting future advances in science and technology, as well as economic developments, with a view to following up and studying their probable impact on world, regional and national technological and social development in different areas and sectors.

3. Assistance in the study and negotiation of the conditions and terms of technology transfer

3.1 The Centre will establish and maintain a national registry for all technology transfer agreements and arrangements.

3.2 It will conduct legal and economic studies to assess and evaluate such agreements and arrangements, with a view to increasing, if possible, recipients' negotiation capabilities and securing the best possible terms and conditions.

3.3 It will assist in the preparation of national regulations and in other legislative and administrative arrangements for technology transfer transactions

3.4 It will assist in studying the various legal, economic and technical problems regarding industrial property, licensing, patent agreements and arrangements, as well as national standards and specifications.

3.5 It will participate in and follow up international efforts for the establishment and implementation of the "international code of conduct on the transfer of technology" and other relevant international and regional arrangements.

4. The promotion of the diffusion of technology information

4.1 The Centre will arrange for the acquisition, documentation and retrieval of updated material concerning alternative sources of local, Arab and foreign technology, machinery and equipment and of related techno-economic data, and will promote the diffusion of such material among users.

4.2 It will undertake the preparation of updated indexes of national, Arab and international technology suppliers, consultants, experts and other sources of technology-related market information, as well as indexes concerning research, design and development capabilities.

4.3 It will maintain close links with Arab, regional and international centres and services engaged in providing technology information, as well as with science and technology documentation centres.

4.4 It will participate in and follow up international and regional efforts directed towards facilitating the procurement and accessibility of technology information.

4.5 It will establish a "data bank" for the collection and retrieval of updated technology iformation.

4.6 It will publish its own reports and studies and ensure their circulation and exchange with similar institutions in the country, the Arab world and abroad.

5. The organization of training programmes in the field of the transfer and development of technology

5.1 The Centre will encourage and organize continuous programmes of research and training in methodologies of technology policy and planning, mainly in the areas of:

(a) Science and technology policy and planning;

(b) The selection, absorption and adaptation of technology;

(c) The unpackaging of technology;

(d) The evaluation and assessment of technology;

(e) The negotiation of contracts, agreements and arrangements relating to the transfer, adaptation and development of technology;

(f) Industrial property and patents;

(g) Technology information.

5.2 Training programmes could be conducted through:

(a) The organization of training seminars and workshops on various aspects and problems in the field of technology policy and planning;

(b) The identification and provision of information on specific opportunities for training in various fields.

5.3 The Centre will encourage, as appropriate, the orientation of educational training and curricula towards technological needs and technology policy and planning.

5.4 It will encourage studies on reverse technology transfer and make the necessary recommendations.

6. The promotion of national, Arab, regional and international co-operation

6.1 The Centre will promote co-ordination and co-operation with related institutions in the country, particularly with the productive and science and technology systems, as well as with the educational system, manpower planning organizations and development financing institutions.

6.2 It will establish close links with both the national Arab centres for the Transfer and development of technology; and the Arab Regional Centre for the transfer and Development of Technology (whenever it is established), in all matters pertaining to responsibilities, functions, and implementation procedures, with a view to the sharing of experiences, co-operation, co-ordination and the undertaking of joint action and projects as appropriate.

6.3 It will promote co-operation with other national, subregional, and regional centres for the transfer and development of technology and with related institutions particularly those in developing countries.

6.4 It will promote co-operation with agencies, organs of the United Nations system and other international institutions working in the field of the transfer and development of technology. Such co-operation can entail short-term and long-term arrangements in different areas of activity.

IV. Institutional organization of the Centre

A. Approaches determining the setting up of the Centre

11. The institutional arrangements for the establishment of a national centre for the transfer and development of technology in a country depend principally on a number of major factors, namely:

(a) Socio-economic and political conditions;

(b) The level of development attained;

(c) The development strategy applied;

(d) Manpower resources;

(e) Financial and natural resources;

(f) The institutional infrastructure and linkages;

(g) The size of the country and the physical and cultural environment.

12. The Arab countries vary considerably in terms of these factors, although an appreciable minimization of the differences among those countries could be attained through co-operation, co-ordination and complementarity in the activities of similar institutions. The establishment of the proposed Arab Regional Centre for the Transfer and Development of Technology would assist greatly in achieving common goals in technology transfer.

13. In general terms, depending on the political decision and the actual prevailing conditions, the Centre may have to be built up:

(a) Completely from the beginning, including some of the necessary supporting infrastructure;

(b) On existing institutions;

(c) On a mix of some existing institutional arrangements;

(d) On an autonomous basis, with well defined institutional linkages within a relatively strong existing infrastructure.

14. A country with relatively strong development planning machinery is also likely to be able to achieve more effective results in terms of institution building and functioning.

15. The national strategy concerning the nature of the technologies required, mainly for rural/urban purposes, or for placing the main emphasis on industries producing intermediate and capital goods, would have a marked bearing on the character of the Centre.

16. Owing to several developmental, institutional, resource and financial elements, the setting up of the Centre may be bound to be gradual, selective and based on well defined strategy priorities. The process might comprise the following stages:

(a) As first step, the conclusion of arrangements for the registration of contracts relating to the transfer of technology, and the acquisition of technological information, combined with a training programme for the personnel concerned with the elements of the transfer process;

(b) Subsequent stages would entail the Centre becoming familiar with:

(i) The selection, analysis and unpackaging of contracts and the acquisition of negotiating capabilities

(ii) the assessment and evaluation process.

17. The main functions and activities of the Centre will be principally based on an inter-disciplinary approach and on team work.

B. Status of the Centre

18. Being a central body entrusted with the formulation of strategic national policies and plans concerned with the transfer and development of technology, and undertaking responsibilities for guidance, advice and assistance in a consultative and/or executive capacity as the case might be, the Centre must in each country be a high-ranking governmental agency.

19. In the light of its objectives, functions, organization and institutional linkages, it is clearly advisable that the Centre should have an autonomous status and be linked to the highest possible authorities. These could be - depending on the conditions in each country - the highest national bodies responsible for development planning, industrial development or science and technology.

C. Staffing of the Centre

20. Basically, the Centre will need to have a core of permanent qualified staff and supporting assistants to meet the demands of its functions, according to priorities and depending on availability and training. Although the rate of growth of such a core of staff will be commensurate with the gradual increase in the scope of its work and services, in the light of the diversity of subject areas which may need to be considered, it would be both impossible and inappropriate to attempt to retain on a permanent basis the services of all types of specialists. Accordingly, the Centre should have recourse to the services of short-term consultants or experts wherever available, either within the country or outside.

21. This dual-staffing system would provide the required expertise with the maximum of efficiency and the minimum of cost and provide wider opportunities for additional activities and new linkages.

22. The categories of qualified personnel would include consultant technologists (scientists and engineers) and economists able to identify and evaluate technologies in the range of developmental and economic activities being undertaken in the country; others with academic and practical training in the law (especially that relating to industrial property)and in commerce, accountancy, economics and statistics; others with training in the unpackaging of imported technology (in co-operation with the technologists), in reviewing contracts and conducting or participating in negotiations; design engineers with experience in research and development and capability in promoting the adaptation of acquired technology and initiating the development of indigenous technology; and specialists (with a science, engineering or economics background) in documentation and information. A multidisciplinary background, a knowledge of foreign languages and practical experience in scientific or production systems would be of considerable additional value.

23. Continuous on-the-job training or training in similar and related institutions in the Arab countries, and in developing and developed countries, in addition to training with international bodies concerned with technology transfer, will be a necessity.

24. Special incentives of different kinds will be required to attract qualified staff, either on a permanent or a temporary basis. Qualified manpower should receive the equivalent of the highest salary scale in the country.

D. Linkages with the Centre

25. The Centre will be by definition the main national institution responsible for the process of the transfer and development of technology. Therefore, it must have effective links with other bodies responsible for activities directly or indirectly concerned with this process. Accordingly, the principal linkages will be with:

(a) The planning organization responsible for formulating the development strategy and the drawing up of national development plans and projects;

(b) The authorities responsible for economic and financial policies, national and foreign investment, and for devising, controlling and administering investment laws and regulations and fiscal or other incentives;

(c) The institutions responsible for project preparation and/or assessment;

(d) The institutions responsible for science policies, including research and development, design and engineering. Too frequently in Arab and developing countries, research institutions are isolated from both the productive system and imported technology transactions. It is a major responsibility of a national centre for the transfer and development of technology to assist in radically changing this situation;

(e) The organs responsible for industrial property, patents, standardization and quality control;

(f) The education and training system;

(g) The institutions responsible for social and cultural research. This linkage will be utilized in order to assess the potential impact of technological plans and transfers on the value systems and traditions of the society concerned.

26. The mechanism of such linkages should be clear, simple, permanent and dynamic. It must be established at both the structural and the action-oriented level. The mechanism may be constituted as follows:

(a) <u>At the structural level</u>:

(i) High level representation on the Board and the Executive Committee of the Centre;

(ii) Adequate representation in technical expert committees attached to the Board, or in the consultative panels formed by the secretariat of the Centre to assist various divisions and to co-ordinate their work with related institutions.

(b) At the action-oriented level:

(i) Direct communication and linkage between the various divisions and the related institutions. (An example: a technology policy and planning division should maintain continuous organic relations with the national planning body, the ministries of planning, economics and finance, the bodies responsible for investment, sectoral ministries, particularly their divisions responsible for project preparation and evaluation, science and technology policy bodies, etc.).

(ii) Joint institutional and contractual activities in various areas, including various studies, research projects and programmes between the Centre and other institutions concerned.

E. Financing of the Centre

27. Since the Centre would be a governmental agency, it would be financed by the Government. However, other sources of finance must not be excluded. At later stages of the development of the Centre, some programmes, studies, and other services could be conducted against reimbursement under contractual arrangements, particularly those requested by private sector users.

28. Appropriate budget allocations would be made, dependent on the size of the Centre, and would expand in parallel with its growth.

29. Regular budgets should normally cover three kinds of expenses: capital, staffing and current expenses.

30. Capital expenses would include the cost of premises, buildings and necessary major installations and equipment. These expenses could largely be cut if the Centre were housed in some appropriate available premises. The acquisition of expensive equipment, such as computer facilities for the documentation and retrieval of technological information, might be postponed to a later stage in the growth of the Centre, although its potential necessity in the future would of course be kept in mind.

31. Staffing expenses might constitute the main bulk of the expenditure in the first phases of the establishment of the Centre. A senior officer will normally need the assistance of two research assistants and one secretary (senior man-year). Cost estimates vary from one country to another. A multiple of senior man-years depending on the number of working divisions and unit functions, should lead to some budgetary staff estimates.

32. However, such estimates should be subjected to functional requirements. In the working paper on the Arab Regional Centre for the Transfer and Development of Technology (E/ECWA/NR/3), the idea of functional units was put forward, and it was estimated that:

(a) A technical prefeasibility study required about 1-5 work-years;

(b) A technical feasibility study required about 10 work-years.

33. Accordingly, to perform such prefeasibility and feasibility studies, about 15 work-years would be needed. This would constitute the minimum requirement for a qualified task force. In addition, managerial and overhead charges should be added, of the order of 10-15 per cent. Special consideration should also be given to various forms of technical consultancy services.

34. Current expenses for regular activities, maintenance, etc. of the order of 15 per cent must be earmarked, in addition to those incurred for meetings, workshops and the like.

35. In general, estimates must be recognized as tentative, and have to be considered as being based entirely on the size of the Centre, its functional activities and short-term and long-term plans.

36. International assistance may be sought, particularly in the initial stages of the establishment of the Centre, in the recruitment of some foreign consultants, in the provision of training programmes and in the supply of information materials and possibly retrieval devices; in addition, it would be necessary to take into account the cost of certain studies that might be undertaken jointly with some international bodies in such areas as might be deemed appropriate.

37. The competent government authorities would audit and control all financial statements, including those of income and expenditure, under the normal legal jurisdiction and with due regard to the special regulations of the Centre.

F. Organs of the Centre

38. The Centre will have the following organs:

(a) The Board;

(b) The Executive Committee;

(c) The Secretariat;

(d) Such other subsidiary organs as may be established in accordance with the provisions of its mandate.

1. The Board

39. This organ may be called the "Technology Board" or the "Executive Board", or some other terminology may be used, as appropriate.

40. The Board is the governing body of the Centre. Its main responsibilities are:

(a) To formulate and approve the policy and plans governing the activities of the Centre;

(b) To supervise the implementation of working programmes;

(c) To approve institutional arrangements, the budget and the accounts of the Centre;

(d) To consider proposals submitted to it by the Executive Committee relating to the objectives and functions of the Centre, and to take decisions thereon, and on their implementation;

(e) To determine its own procedures, including the convening of its sessions, quorum, the conduct of business and any other provisions related to its work;

(f) To approve periodic and annual reports on the activities of the Centre;

(g) To elect the Vice-Chairman of the Board from among its members;

(h) To elect the members of the Executive Committee;

(i) To establish such special and technical committees as it may deem necessary or desirable;

(j) To establish such administrative, financial and other regulations as necessary for the effectiveness of the work and procedures of the Centre;

(k) To consider and approve specific linkages with other Arab national centres for the transfer and development of technology, the Arab Regional Centre for the Transfer and Development of Technology (when established), and similar institutions in other countries, regions and subregions, as well as international institutions within and outside the United Nations system;

(l) To appoint foreign consultants to the Centre it may possibly delegate this mandate to the Executive Committee, or retain it as regards long-term appointments;

(m) To exercise such other powers and perform such other functions as are conferred or imposed on it by its mandate;

(n) To delegate any of its powers and functions, as appropriate, to the Executive Committee and the Director General of the Centre.

41. The Board will consist of:

(a) The Minister in charge of technology policy (Chairman) (to be decided by the Government concerned);

(b) High-level representatives (Ministers or Under-Secretaries of State, Presidents or Vice-Presidents, Directors or Deputy Directors) of ministries and bodies indicated in paragraph 25 above, as ex-officio members;

(c) A certain number (say, 3-5) of eminent personalities among scientists, engineers, economists and others concerned with the objectives and functions of the Centre;

(d) The Director General of the Centre (Secretary General).

42. The Board may elect the Vice-Chairman (see paragraph 40(g) above). The appointment of the Board members and officers would be made by the high-level political authority (the Head of State or the Prime Minister).

Sessions of the Board

43. (1) The Board will meet in ordinary session once every three months (the period can be determined by each country, as appropriate). It may meet in extraordinary session if it so determines, or if it is requested to do so by the Chairman, the Executive Committee or a certain number (to be indicated) of the members. In such cases, the proposed agenda must be clearly defined.

(2) Decisions of the Board will normally be by consensus. However, voting arrangements should be determined by its own procedures.

(3) The Board may on the recommendation of the Chairman, the Executive Committee, or the Director General, and subject to its rules of procedure, invite such persons or institutions as it deems desirable to attend sessions of the Board, for hearings or consultations.

2. The Executive Committee

44. The Executive Committee will:

(a) Have, subject to such directions of a general nature as the Board may give, over-all responsibility for the execution of the work programme of the Centre, and shall take all the necessary steps to ensure the effective and rational execution of such work programmes;

(b) Consider the draft work programmes and the corresponding budget of the Centre submitted to it by the Director General and transmit them, with the necessary recommendations, to the Board for approval;

(c) Propose, for the approval of the Board, the financial, administrative and other regulations it deems necessary for the effectiveness of the work and procedures of the Centre;

(d) Submit to the Board periodic reports on the activities of the Centre, including the implementation of work programmes and financial statements;

(e) Consider, recommend and submit for the approval of the Board details of the co-operative and co-ordinative linkages with other Arab national centres the Arab Regional Centre for the Transfer and Development of Technology (when established) and similar institutions in other countries, regions and subregions, and with international institutions within and outside the United Nations system;

(f) Propose, for the approval of the Board, the establishment of such special and technical committees as it may deem necessary or desirable and prescribe their terms of reference and rules for the conduct of their affairs;

(g) Exercise such other powers and perform such other functions as are conferred or delegated by the Board.

45. The Executive Committee will consist of:

(a) The Minister in charge of technology policy and Chairman of the Board (Chairman);

(b) The Vice-Chairman of the Board (Vice-Chairman);

(c) 3 to 5 members of the Board to be elected by the Board; one of them (or more) may be among the non-ex-officio members;

(d) The Director General of the Centre (Secretary General).

Sessions of the Executive Committee

46. (1) The Executive Committee will meet in ordinary session once a month. It may meet in extraordinary session, if so requested by its Chairman.

(2) The Executive Committee will adopt its own procedures, in parallel with those of the Board.

3. The Director General and the Secretariat

47. The Secretariat (or Diwan) of the Centre will be headed by the Director General, who will be appointed (by the Head of State or the Prime Minister, as appropriate) to serve in office for a term of five years (or as otherwise decided) and will be eligible for re-appointment for further terms (or as decided).

48. The Director General of the Centre will be the chief executive officer of the Secretariat. In accordance with the policies, decisions and directive of the Board and the Executive Committee, he will have responsibility for the organization, direction and administration of the Secretariat.

49. The Director General of the Centre will have the status, responsibilities and powers of a minister (to allow for the smooth and effective running of the work of the Centre and for ease of communications with ministers of the Government and high-ranking officials).

50. A Deputy Director General or more than one may assist the Director General of the Centre in the discharge of his functions and responsibilities.

51. The Director General of the Centre with the assistance of his Deputy (or Deputies) and other officials of the secretariat, will, among other things:

(a) Serve and assist the organs of the Centre in the performance of their functions;

(b) Keep the functioning of the Centre under continuous examination and, where appropriate, report the results of such examination for action by the Board or the Executive Committee;

(c) Submit the draft work programme and the corresponding budget of the Centre to the Executive Committee for consideration;

(d) Submit periodic and annual reports on the activities of the Centre, including financial statements on its income and expenditure, to the Executive Committee for its consideration;

(e) Carry out the work programme of the Centre and co-ordinate the work of the Centre with that of other institutions active or interested in furthering its objectives and functions;

(f) Undertake such work and studies and perform such services relating to the objectives and functions of the Centre as may be assigned to him by the Board or the Executive Committee, and also make such proposals thereon as may assist in the efficient, co-ordinated and integrated functioning and development of the Centre to the Board or the Executive Committee, as appropriate.

52. The Director General will act as the Secretary General of the Board and the Executive Committee and in that capacity be will perform functions relating to the organization of the meetings of these organs in consultation with the Chairman - or the Vice-Chairman in his absence - and take the necessary follow-up action.

53. The Director General will legally represent the Centre in courts of law and at various national, Arab, regional and international levels.

54. The Director General may delegate any of his powers and functions, as appropriate, to the Deputy Director General (or Deputies), except those delegated to him by the Board and the Executive Committee.

55. In case of the Director General's leave or resignation, the (senior) Deputy Director General will take charge of the Centre and assume all the responsibilities, functions and powers of the Director General.

4. Organizational structure of the Secretariat

56. The Secretariat is the technical and administrative body of the Centre.

57. The structural arrangements for the Secretariat will be drafted and proposed by the Director General and submitted to the Executive Committee and the Board for consideration and approval (unless they are already defined in the law constituting the Centre).

58. Any changes or modifications in the structural arrangements of the Secretariat will be drafted and proposed by the Director General and submitted to the Executive Committee and the Board for consideration and approval.

Divisions of the Centre

59. The Secretariat will consist of a number of divisions, which will carry out the functions as proposed. These divisions could be the following:

(1) Technology Policies and Planning Division,
to carry out the functions outlined in(III - Functions item 1).

(2) Technology Assessment and Evaluation Division,
to carry out the functions outlined in (III - Functions item 2).

(3) Technology Registration and Contracts Division,
to carry out the functions outlined in(III - Functions item 3).

(4) Technology Documentation and Information Division,
to carry out the functions outlined in (III - Functions item 4).

(5) Training Division,
to carry out the functions outlined in (III - Functions item 5).

(6) Technology Co-operation and Co-ordination Division,
to carry out the functions outlined in(III - Functions item 6).

(7) Administration Division,
to carry out administrative and financial functions.

Technical Inter-divisional Committee

60. A Technical Inter-divisional Committee emerges as a necessary interconnecting instrument for the planning, co-ordination, follow-up and assessment of the technical activities of the Centre, i.e. divisional activities and programme activities. This Committee should be presided over by the Director General and will consist of the Director General, his Deputy (or Deputies) and the heads of divisions. It should meet regularly, preferably each week.

61. Technical preparations for items on the agendas of the Board and the Executive Committee may be also entrusted to the Technical Inter-divisional Committee.

Consultative panels

62. In line with the functions of the various divisions panels of experts may be formed. Members of these panels would include the head and senior staff members of each division, and also high-level experts from institutions connected with the work of each division, to be nominated in consultation with those institutions. These panels would advise and assist in drawing up the work programme of each division and would co-ordinate these activities with the objectives, functions and needs of the institutions concerned, so providing an organic and reciprocal linkage between the functions and work programmes of the Centre and the policies, projects and requirements of the country in general. It would be expected that such co-ordination might lead potentially to joint action programmes and create an institutional instrument operating between what might be called the supply side (the Centre) and the demand side (the institutions) at the national level.

63. The recommendations of such panels should be systematically and periodically reported to the Technical Inter-divisional Committee and to the Director General of the Centre through the heads of the divisions, who could act as rapporteurs to these panels. The Chariman of the Panels could be elected from among the participating members of the institutions concerned.

Important considerations

64. The initial setting up of all the divisions would make provision for covering all the functions of the Centre, and would complete its structural organization. However, dependent on various constraints and on the availability of opportunities, the gradual building up of the Centre should be possible. As previously indicated (see paragraph 16 above), priority areas for the initiation of functions may be listed as:

(a) The registration of contracts;

(b) Training programmes;

(c) Technological information;

(d) The selection of technology;

(e) The unpackaging of technology;

(f) Assessment and evaluation.

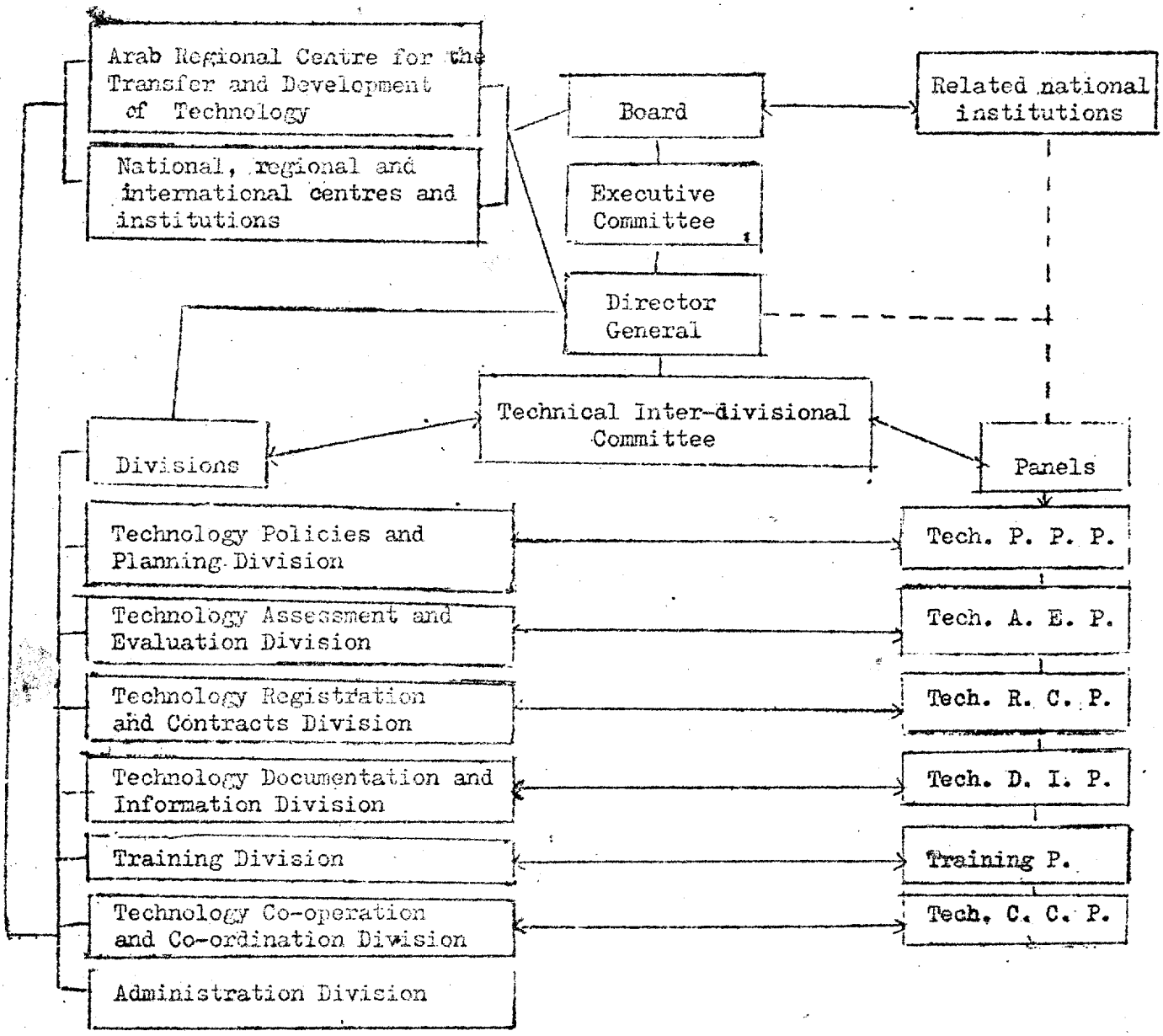
Accordingly, relatively small nuclei or units may be founded in the beginning, depending on priorities and resources. The gradual addition of other units may follow. At later stages, these units may receive more support and be enlarged to function as full divisions.

65. Another approach may be considered, entailing the amalgamation of certain functions within fewer divisions. For example, with reference to the divisions listed in paragraph 59 above, Divisions (2) and (3) might be amalgamated, as might Divisions (5) and (6).

66. A definite, co-ordinated and integrated approach to problems will necessitate interdisciplinary and team-work activities in the Centre's action programmes. The divisions should not - and indeed cannot - be recognized as independent "watertight" compartments; rather, their functions should be regarded as being of an interconnected, complementary and diffused nature. Many programmes may cut across a number of divisions and be their joint responsibility.

V. Organizational chart

NATIONAL CENTRE FOR THE TRANSFER AND DEVELOPMENT OF TECHNOLOGY



Annex I

(Functions as prepared by an UNCTAD mission to Iraq (UNCTAD/TT/AS/2, of 5 June 1978))

(i) Preparing a national technology plan;

(ii) Formulating a co-ordinated set of policies for the implementation of the technology plan;

(iii) Identifying technological requirements;

(iv) Obtaining, analysing and providing technological and related economic and commercial information;

(v) Evaluating and selecting technologies;

(vi) Unpackaging imported technology;

(vii) Negotiating technology agreements and the acquisition of related inputs;

(viii) Registering, recording and monitoring technology agreements and arrangements;

(ix) Acting as a forum for co-ordination and communication.

Annex II

(Functions as stated in the UNCTAD "Handbook on the acquisition of technology by developing countries" (UNCTAD/TT/AS/5, 1978))

The core functions of a national centre for the transfer and development of technology are:

(i) To assist, within the framework of national, social, economic and political constraints, in the identification of technological needs for a variety of economic activities;

(ii) to assist in the acquisition and analysis of information required on alternative sources of technology from all available sources, domestic and foreign, and its delivery to users;

(iii) to assist in the evaluation and selection of technologies appropriate for the different jobs to be done, with the emphasis on decision-making - the critical stage in the whole process;

(iv) to assist in the unpackaging of imported technology, including the assessment of its suitability, the direct and indirect costs and the conditions attached;

(v) to assist in the negotiation of the best possible terms and conditions for the technology to be imported, including arrangements for the registration, evaluation and approval of agreements for its transfer;

(vi) to promote and assist the absorption and adaptation of foreign technology and the generation of indigenous technology, linked specifically to design/engineering, research and development;

(vii) to promote the diffusion of technology already assimilated, whether indigenous or foreign among users;

(viii) to co-ordinate policies in general and evaluate their internal consistency in relation to the transfer and development of technology.