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SECRETARIAT OF THE UNITED NATIONS
CONFERENCE ON SCIENCE AND TECHNOLOGY
FOR DEVELOPMENT

# REPORT OF THE CARIBBEAN SUB-REGIONAL SEMINAR ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

(Kingston, Jamaica, 14 to 18 February 1978)

78-3-220-75

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/Annex I

# I. ORGANIZATION OF THE MEETING

## 1. Place and date

1. The Caribbean Subregional Seminar on Science and Technology for Development, convened by the Secretariat of the Conference of the United Nations on Science and Technology for Development, the Economic Commission for Latin America, and the Government of Jamaica, was held from 14 to 18 February 1978 in the Conference Area of the Pegasus Hotel in Kingston, Jamaica.

## 2. Attendance

2. The Meeting was attended by representatives of seven member states of the Commission: Barbados, Cuba, Dominican Republic, Grenada, Guyana, Jamaica and Trinidad and Tobago.

3. Two specialized agencies of the United Nations were represented: the United Nations Development Programme (UNDP) and the World Intellectual Property Organization (WIPO).

4. Also present was the East Caribbean Common Market (ECCM), an intergovernmental organization.

5. A complete list of the participants at this Meeting may be found in Annex I of this report.

## 3. Opening meeting

6. The opening ceremony of the Meeting took place on the morning of 14 February in the Pegasus Hotel. The Secretary-General of the United Nations Conference on Science and Technology for Development was

/represented

represented by Mr. Jürg Mahner, and Messrs. Hamid Mohammed, Isaías Flit and Niels Brandt were representing CEPAL.

7. Also present at the opening ceremony were Mr. David Core, Deputy Prime Minister and Minister of Finance and Planning, and Senator Richard Fletcher, Minister of State in the Ministry of Finance and Planning.

8. In his opening address, Mr. David Core mentioned, inter allia, that in his view, the role of the Caribbean Region is extremely critical in matters of international debate, and that the participants in the Meeting should use this opportunity, as members of the developing world, to share experiences and to exchange ideas on science and technology in order to come to grips with this important aspect of the development process and be able to arrive at far-reaching and implementable decisions within the social and physical aspects of the development proposals for the Caribbean area.

9. He also mentioned the importance of arriving to goals at national and international levels leading towards efforts to narrow the gap between developed and developing countries.

10. Jamaica's endeavours to achieve a New International Economic Order was mentioned by the Deputy Prime Minister, pointing out that for this Order to be achieved, there must be improved access to patent knowledge by developing countries.

11. During his address Mr. Core stressed that the progress for countries such as Jamaica cannot be measured purely in terms of gross national product (GNP) but must take into consideration international equity and

/quality

of life. Development must include social justice, a measure of popular participation and a more orderly, selective and continuous transfer of technology from the rich to the poor countries, and from the rich to the poor within national boundaries.

12. Mr. Core clearly stated the Government of Jamaica's commitment to democratic socialism and the changes implied in this philosophy. He pointed out that scientific and technological improvements are sinonimous with change and it is up to the Jamaican Government as well as to the governments in the region who face the inescapable responsibilities of reorganizing their societies upon acceptable foundations to recognize to what extent science and technology permits such activities. Jamaica's proposals is to utilize the Scientific Research Council for this purpose. (For a full version of Mr. Core's address, see Annex II enclosed.)

13. Mr. JUrg Mahner requested the floor on behalf of the Secretariat of the United Nations Conference on Science and Technology for Development (UNCSTD) to stress on the overall objectives of the Conference, the goals and subgoals set for the Conference as stated in various resolutions. Emphasis was given to the preparatory process as being an important nodal point for the success of the Conference itself; nevertheless, in a long term perspective, the preparatory process and its continuation after the Conference in other forms of activity should be even more important than the Conference itself. The conditions of transfer of technology, access to scientific and technological information, the international patent system and other important subjects will be a matter of international

/negotiations

negotiations and agreements. However, the position that the developing countries should take in these subjects and their strength in the fight for increased independence and greater autonomy, individually and colectively, will greatly depend on their capacity to deal with the issues at hand.

14. Mr. Mahner further pointed out that national and international efforts to build this capacity will have to be analyzed for most international problems. This analysis would have to include a critical look at the UN system which, up to now, has contributed in assisting developing countries in building up their capacities.

15. Mr. Mahner expressed his feeling that meetings like this are supposed to establish not only co-operation among countries of the same subregion, but also to create a dialogue between these countries and the Secretariat, and, as Mr. Mahner stated: "your voices and your needs which continuously should be presented to the Secretariat of the Conference, enable us, at all stages of the preparatory process, to assist you as much as possible in reaching your objectives of the Conference". (For a full version of this statement see Annex II.)

16. Mr. Arnold K. Ventura, Chairman/Director of the Scientific Research Council of Jamaica, addressed to the meeting making three appeals.

- The first was to the world scientific community in order to alleviate the effects of the "brain-drain", mentioning that a convenient way to tackle this problem would be to establish a fund to allow the developing countries to borrow back, for short or long periods, some of the scientists from the developing countries that are now working in developed areas. This fund would assist in the compilation of a directory

/of such

of such third world experts, topping up salaries and providing necessary equipment and materials for the scientists would be effective in their countries which "cradled, supported and educated them in their early years". This would necessarily call for negotiations at the highest level within the developed countries to persuade employers to release these experts for temporary periods.

- The second appeal was made to the masters of technology and their metropolitan countries in order to give the developing countries a chance to develop centers of excellence for appropriate technology in their own areas instead of building them in the heart of the developed world. Mr. Ventura pointed out that if there is a genuine desire to assist the Third World, it is counter-productive to set up these centers in developed countries.

- The third appeal was addressed to the participants of the meeting as brothers of the same subregion, mentioning that there is a need for co-operation and collaboration within themselves and in order to double the efforts to improve their conditions they should find convenient ways to immensely enhance the share of information, review and disseminate the traditional technologies which abound in the area and to pool resources for projects which need best resources.

## 4. Election of Officers

17. Before opening the debate Mr. Isaías Flit, from the CEPAL Secretariat, stressed the need to reach precise conclusions with regard to what the subregion would like to see in the plans of action, both at the regional

/and world

and world levels, that should be presented for consideration during the UN Conference on Science and Technology for Development. He pointed out the need for the developing nations to hold a clear and common political position at the Conference if success is to be achieved in this world gathering.

18. The Board was nominated as follows:

Chairman: Arnold K. Ventura (Jamaica)

First Vice-Chairman: Pedro Herrera Molina (Cuba)

Second Vice-Chairman: John P. Jeffers (Barbados)

Rapporteur: Patrick Monroe (Guyana)

## 5. Adoption of the agenda

19. The following provisional agenda was approved for the meeting:

1. Opening of the Meeting
2. Election of Officers
3. Approval of the agenda
4. Preparatory activities of the Conference
   a) Report of CEPAL on the Second Meeting of the Preparatory Committee
   b) Report of WIPO on the Seminar on Technological Information contained in Patent Documents, held in Mexico.
   c) Report of the UNCSTD Secretariat on the activities carried out to date
5. Guidelines for the preparation of national papers
6. State of preparations of national analysis and means to strengthen and expedite the corresponding documents
7. Type of co-operation requiered by governments

/8. Subregional

8. Subregional aspects to be included in the regional paper to be submitted by CEPAL to the Regional Conference in 1978

9. Other matters

10. Adoption of the report

11. Closing of the Meeting

## 6. Closing session of the Meeting

20. At the final plenary meeting, held on the afternoon of 17 February 1978 the report on the participants' work was submitted for their consideration.

## II. PREPARATORY ACTIVITIES OF THE CONFERENCE

### 1. Report of CEPAL on the Second Meeting of the Preparatory Committee

21. Mr. Niels Brandt, representing CEPAL, presented a resumé of the activities of the Second Meeting of the Preparatory Committee which took place in Geneva during the latter part of January 1978, as follows: the agenda of work contained four sustantive subjects: a) the report of the Secretary General of the Conference; b) the recommendations prepared by the Regional Economic Commissions; c) the preparations of the Regional Meeting; d) the preparations of the provisional rules and procedures for the Conference.

22. The Secretary-General of the Conference prepared two main documents: a progress report and another document regarding the selection of the subject areas. (His inaugural speech was distributed as a document of the Conference.)

23. In his progress report the Secretary-General made reference to the establishment of 104 national focal points (26 of which were established in CEPAL's region). He also informed that 56 countries had requested technical assistance for the preparation of the national paper (13 of them were in CEPAL's region). Also 70 subregional and national seminars have been organized in preparation for the Conference, 14 of which took place in the Latin American region.

24. In his progress report, the Secretary-General gave grateful recognition to the co-operation received from various organizations of the United Nations system, mentioning the very special role that these organizations

/had agreed

had agreed to offer for the preparation of the Conference and their participation assigning personnel to co-operate in the development of these meetings. He emphasized the collaboration received from the United Nations Development Programme (UNDP), and highlighted the important role of the Advisory Committee on the Application of Science and Technology for Development (ACAST), particularly its guidelines and points of view presented during the 23rd Meeting, which took place in Geneva in November 1977. The Secretary-General also stressed the important co-operation received from other international organizations, such as the intergovernmental and non-governmental organizations.

25. In his report, the Secretary-General made a special reference to item 4 of the agenda of the World's Conference: "Science, technology and the future", pointing out that for this item it has been requested in previous meetings that a document be prepared. A group of experts was invited by the Secretary-General of the Conference to present ideas and formulate a draft. This group of experts gathered in November 1977 for the first time, and again during the Second Meeting of the Preparatory Committee in order to inform of the advances made on such draft.

26. Following the ascending process in the preparations for the Conference, the five Regional Economic Commissions had selected their subject areas; however, a great uniformity and coincidence was found among the areas selected which facilitated the task of combining these areas into a final list which included the aspirations of member countries of all the Regional Economic Commissions. This final list was distributed to all participants of the Caribbean Subregional Seminar.

/27. It is

27. It is important, however, that these areas be contemplated as means to identify and illustrate, in a practical manner, the substantive purposes of the application of science and technology for development; in other words, they should not be taken as priority areas for each member state considering that priorities might change greatly from the needs of one country to those of another.

28. During the Second Meeting of the Preparatory Committee, the documents that should be prepared for the Conference were also discussed. Five different groups of documents were identified as follows:

- Documents for discussion and interchange of views
- Supporting documents
- Three types of documents prepared by the specialized agencies of the UN system, the intergovernmental and non-governmental organizations.

29. With regard to the calendar of the preparatory activities for the Conference, the following points were mentioned during the Second Meeting of the Preparatory Committee:

a) The preparation of regional documents must be initiated immediately by the Secretariat of the Regional Economic Commissions in order for this document to be presented during the Regional Meeting and also during the Third Meeting of the Preparatory Committee that will take place in September 1978. All specialized organizations of the UN system, especially ACAST, the intergovernmental and non-governmental, as well as the scientific communities of all member states, are invited to participate in the preparation of this document.

b) A first

b) A first draft of the national papers should be submitted to the Secretariat of the Conference not later than 1 May 1978; the final version of this document should be presented to the Secretariat on 1 August 1978.

c) With regard to the Regional Conference for Latin America, the plenary of the Second Meeting of the Preparatory Committee was informed of a letter addressed by the Minister of Foreign Affairs of Panama to the Secretary-General of the Conference making a formal offer to host this Meeting in the city of Panama from the 26th to the 28th of July 1978. It was pointed out, however, that this date enters in conflict with the Regional Meeting that the Economic Commission for Africa will celebrate in El Cairo at the same time.

30. During the Second Meeting of the Preparatory Committee emphasis was made on the resolution A/Conf.81/PC/L.12 pointing out that on several ocassions the Committee has insisted to member states and all national and international organizations, that in preparing the national and regional papers for the Conference, they should not forget the action-oriented character these documents should have, in order to facilitate the preparation of plans of actions and programmes to offer the basis to find a solution to the existing problems and to remove the obstacles that interfere with the application of science and technology for development.

## 2. Report of WIPO on the Seminar on Technological Information Contained in Patent Documents, held in Mexico City

31. The representative of WIPO expressed the co-operation that this specialized organization is offering the General Secretariat of the

/Conference

Conference during its preparatory period. He stated that, in consultation with the Secretary-General of the Conference, access to technological information was selected by WIPO as a subject for a series of regional meetings organized in co-operation with the Regional Economic Commissions. Then he gave an account of the first of these meetings which took place in the city of Mexico in October 1977, the Latin American Technical Seminar on Technological Information Contained in Patent Documents. He highlighted the recommendations made by the Seminar to the Secretariat of the Conference, to CEPAL and to WIPO, as well as to the Latin American governments, concerning the inclusion of technological information contained in patent documents in the preparation of the national and regional documents as well as in the agenda items for the Conference.

32. Finally, he mentioned that WIPO was ready to assist any country which so requested it in the preparation of their national paper.

33. The WIPO's representative address led to a debate by the delegates of Jamaica and Cuba. The first of them questioned the usefulness of the information found in patent descriptions; he believed that the granting of patents was being used to obtain additional privileges in the purchase of intermediate components of technology, especially by means of "tie-in" clauses, and asked whether there was any action that WIPO should take or any programme of work which may seek for the solution of this problem.

34. To this, the WIPO representative invited the attention of the participants of the seminar to the training programmes offered by this organization stressing that these programmes would enable the government officials to utilize the information found in patent documents. He

/further

further informed the meeting that these training programmes are already in existence in WIPO

35. The delegate from Cuba referred to the sub-utilization of much of the information found in patent documents and wondered what could be done to remedy the present situation. He also observed that obtaining information from the patent documents could be done in two ways: the passive and the active. In the passive form it is left to the initiative of the developing countries to ask for the information found in patent documents, while in the active way the attention of the developing countries could be called to the relevant and useful information found in these documents.

36. The Chairman requested WIPO's representative to provide additional information regarding their training programmes and activities in this field. The WIPO representative promised to provide this information.

37. The Technical Secretary then stressed the need for a cooperative action among all developing countries in this field, point out that developing countries use scarce finantial resources to implement and maintain patent offices which serve mainly to protect foreign patents, and that usually the technical information contained in patents registered in such offices is very poor.

### 3. Report of the Secretariat of the United Nations Conference on Science and Technology for Development on Activities carried out to date

38. The representative from the UNCSTD Secretariat gave a short report on the activities of the Sec etariat in preparing for the Conference. He pointed out the facts and figures mentioned in the progress report made by the Secretary-General of the Conference during the Second Session of

/the Preparatory

the Preparatory Committee for the UNCSTD, held in Geneva from 23 January to 3 February 1978 (A/Conf.81/PC.3). As the Conference gathers momentum, the efforts of the General Secretariat to provide support to all the national, subregional, regional and worldwide activities are increasing. The main limiting factors to these efforts have been the amount of funds assigned to the Secretariat and the fact that the hiring of advisers and consultants have to go through the regular and sometimes lengthy procedures of the United Nations. He pointed out, however, that thanks to the support of some governments and agencies and new advisory schemes, these limitations are being overcome to some extent. As an example, it was mentioned that the Caribbean Meeting has had financial support from the Swedish Government.

/III. GUIDELINES

## III. GUIDELINES FOR THE PREPARATION OF NATIONAL PAPERS

39. Two main papers were referred to by the delegates during the meeting: the "Guidelines for the Preparation of National Papers" approved during the First Meeting of the Preparatory Committee (January-February 1977) and the "Suggested Structure for the Preparation of National Papers" prepared by CEPAL. In the following deliberations it was agreed that the guidelines approved by the Preparatory Committee gave a good background of the issues to which the national papers should address and the other document could be used as reference to prepare the national papers. It was also stressed that the final structure and composition of the national papers should be left to the discretion of the member states leaving the use of the guidelines only as an orientation in order to have a general homogeneity.

40. During the discussion regarding this particular point of the agenda, it was mentioned that the "power of information" has to be complemented with the "power of secrecy".

41. The representative of CEPAL informed the participants that the Secretariat of the Conference would be responsible for reproducing the national papers if they are up to 32 pages in length; however, if the paper should be longer than that, it would be the responsibility of the country itself to reproduce its own paper.

## IV. STATE OF PREPARATIONS OF NATIONAL ANALYSIS AND MEANS TO STRENGTHEN AND EXPEDITE THE CORRESPONDING DOCUMENTS

42. At this stage of the meeting, the representatives of the countries gave a report on the state of preparations of their respective national papers. Summaries of those reports are in Annex III.

## V. TYPE OF CO-OPERATION REQUIRED BY GOVERNMENTS

43. During the discussion of this agenda item it was suggested that all requests for assistance should be made to the Secretariat of the Conference as early as possible considering that recruitment procedures were usually lengthy.

44. A request was made from one delegation for more information about the availability of experts and funds to finance them. The representative of the Secretariat of the Conference informed that there are approximately 200 experts identified to assist the member states in the preparation of their papers and also that there are financial resources to cover 100 man/months available for this purpose. So far, 56 countries had requested assistance from the Secretariat and 18 experts were already in the field, and another 10 should be starting shortly.

45. Special note was taken of the remarks made by the Chairman in his opening statement to the fact that a United Nations fund should be established to reverse the efforts of the brain-drain as experienced internally as well as externally. It was felt that this fund could assist in the preparation of a list of Third World experts that may be willing to assist their native countries, provide for topping up salaries and also the necessary equipment and materials.

46. There was a strong recommendation that the draft of national papers should be exchanged among the participant countries in the seminar and that it should be circulated through CEPAL's office at Port of Spain. That office will prepare a summary, which could beused for future meetings.

/47. Regarding

47. Regarding the subregional co-operation and the strengthening of the capabilities of science and technology for the region, the representative of CEPAL's Office at Port of Spain gave a brief historical account of events leading to the proposal for the establishment of the Caribbean Council on Science and Technology for Development (CCSTD) and requested the meeting to consider the feasibility study and the draft statutes before presentation to the Third Meeting of the Caribbean Development and Co-operation Committee (CDCC), which was scheduled to be held in Belice from the 12th to the 18th of April 1978.

48. In commenting the feasibility study, the Chairman summarized the recommendation which had come from the consultation meeting held in Guyana in December 1977. He commented that the proposal to establish the Caribbean Council for Science and Technology was a comendable one which had been accepted in principle but that certain modifications seemed necessary before total acceptance. These were:

i) Definite programmes for the Caribbean Council for Science and Technology would have to be identified.

ii) More use of the already established Caribbean institutions should be encouraged.

iii) Existing funds of those institutions <u>should not</u> be affected as the Caribbean Council for Science and Technology was to be established.

iv) Subregional co-operation should be based on specific mechanisms.

/v) A caribbean

v) A Caribbean scientist with a proven record of involvement in regional science and technology activities should be recruited for the specific purpose of visiting all CDCC member countries to gauge the reaction of scientists, technologists and policy makers to the proposed Council.

vi) Involvement of other United Nations agencies (especially UNCTAD and UNIDO) in the preparation for the proposed Council.

49. After a brief discussion the meeting agreed that it was perhaps premature to discuss the proposal in any detail at this stage, but might be useful after the report from the Caribbean scientist referred to in paragraph v) above has been received.

## VI. SUBREGIONAL ASPECTS TO BE INCLUDED IN THE REGIONAL PAPER TO BE SUBMITTED BY CEPAL TO THE REGIONAL CONFERENCE IN 1978

50. At this point of the meeting it was suggested that another seminar be convened in order to consider a subregional common position which would identify subregional priorities and would also furnish inputs for the regional paper. A general discussion ensued concerning the relative merits of such a meeting as well as the mechanisms to identify the venue, financing and expenses to organize such a seminar. Further consideration brought the meeting to the following decisions:

i) Venue: Grenada or Barbados (subject to confirmation)

ii) Date: 1 to 3 June 1978

iii) Sponsorship: the Secretariat of the United Nations Conference for Science and Technology for Development would be requested to sponsor one official delegate for each participating country; however, the number of representatives in every delegation would be left to the discretion of every country.

iv) Working documents:

- CEPAL Port of Spain will prepare a synthesis of the drafts of national papers.
- Each participating country would also endeavour to identify specific areas and subregional collaboration and submit a short working document.

v) The possibility of SELA's participation should be contemplated.

vi) Official languages: English and Spanish

/VII. OTHER

## VII. OTHER MATTERS

51. The delegate of Guyana expressed that from September 4 to 15 1978 a science meeting will be held in Georgetown, Guyana for all the Commonwealth countries. In that meeting the common problems and possible co-operations in the field of science will be discussed. He stated that the Commonwealth Meeting is related with the present seminar because, there also, the Caribbean countries that belong to the Commonwealth could have a coordinated action.

52. The representative of WIPO made reference to three main contributions in the promotion of innovative capacities and in strengthening of national infrastructures, namely:

a) The guide on the legal aspects of the negotiation and preparation of industrial property licenses and technology transfer agreements to the needs of developing countries.

b) The feasibility study on technological information presented to ECOSOC (E.60/54).

c) The model levels for developing countries on inventions and know-how.

53. Once more the representative of WIPO reiterated that this organization is ready to assist the member states in all of these areas of activity.

54. The delegate of Jamaica gave a presentation on "The Caribbean Technology Studies Project" which was set forth by the University of Guyana and the University of the West Indies between October 1975 and November 1977. Reports on the outcome of the project are being circulated to all the governments of the subregion as well as subregional organizations.

/55. The

55. The project consisted of a series of individual research programmes which deal with the general problem of transfe of technology and with sectorial analysis with a view to determining which technologies are currently in use, to what extent those technologies are appropriate and which policies should be recommended to make a better use of technologies for development.

56. The following sectors were covered by the study:

- Problems of small farming
- Agro-based industries
- Manufacturing industries
- Petroleum and bauxite industries
- Petrochemical industry
- Construction and building materials

The project defined areas where policies have to be revised.

57. Another delegate of Jamaica distributed a document entitled "Technology Transfer as an Exercise in Social Intelligence". This document can be found as Annex IV of this report.

## VIII. RECOMMENDATIONS

58 After agenda items one through nine had been covered, the Chairman asked the participants to identify the main recommendations of the seminar so they could be listed separately in the report. The suggestion was approved and in the ensuing discussion the following recommendations were approved:

1. Drafts of national papers should be exchanged between countries of the subregion.

2. A second subregional seminar is to be held in Grenada from June 1 - 3 1978, to agree on a subregional position for the Regional Conference. CEPAL Port of Spain will prepare, in close consultation with the countries, a working document for this meeting. Financial support for the meeting will be submitted to UNCSTD Secretariat.

3. The preparatory activities for UNCSTD and TCDC (Technical Cooperation among Developing Countries) should be closely coordinated at the national, subregional, regional and international levels.

4. Science and technology experts from the subregion should be more adequately utilized as technical advisors in the UNCSTD preparations.

5. The studies prepared by the University of West Indies, the University of Guyana as well as WIPO should be circulated among the governments of the subregion.

/Annex 1

## Annex I

## LIST OF PARTICIPANTS

### 1. Member States

BARBADOS

Representative: John P. Jeffers, Deputy Chief Agricultural Officer, Secretary of National Council for Science and Technology

Members of the Delegation: Laurence Wilkinson, Economist, Ministry of Finance and Planning; Sidney L. Martin, Chairman, National Council for Science and Technology

CUBA

Representative: Eugenio Latour, Director, Organismos Económicos Internacionales, CECE

Members of the Delegation: Mirta Barquet Farah; Pedro Herrera Molina, Director de Economía de Ciencia y Tecnología

GRENADA

Representative: Hansen Raeburn

GUYANA

Representative: Patrick Monroe, Secretary-General, National Science Research Council

JAMAICA

Representative: Arnoldo K. Ventura, Chairman/Director, Scientific Research Council

Members of the Delegation: Norman Girvan, Chief Technical Director, National Planning Agency; Jocelyn Richards; Oulda Lewis; Jacqueline Mayers; H.C. Harries; Versada Campbell; A.B. Tapper; Stevan Dedijer

DOMINICAN REPUBLIC

Representative: Pedro Catrain, Cordinador, Unidad de Ciencia y Tecnología, Secretariado Técnico de la Presidencia

TRINIDAD AND TOBAGO

Representative: T. Baden-Semper, Deputy Permanent Secretary, Ministry of External Affairs

Member of Delegation: John Spence, Professor, University of the West Indies, St. Augustine

## 2. United Nations Agencies

### A. United Nations

United Nations Development Programme (UNDP)

Bettina Corke, Consultant UNDP/UNFPA

### B. Specialized Agencies

World Intellectual Property Organization (WIPO)

Andrés Dávila, External Relations Officer

## 3. Intergovernmental Organizations

East Caribbean Common Market (ECCM)

David Rawlings, Research Officer, Industry Division

## 4. Secretariat

United Nations Conference on Science and Technology for Development (UNCSTD)

JÜrg Mahner, Research Fellow, UNCSTD/UNITAR

Economic Commission for Latin America (CEPAL)

Hamid Mohammed, Deputy Director, CEPAL Port of Spain

Jean Casimir, Social Affairs Officer, CEPAL Port of Spain

Isaías Flit, Science and Technology Cordinator, CEPAL-Mexico

Niels Brandt, Economic Expert in Science and Technology, CEPAL-Mexico

/Annex II

## Annex II

## ADDRESSES

1

ADDRESS BY THE HONOURABLE DEPUTY PRIME MINISTER
AND MINISTER OF FINANCE AND PLANNING
AT THE OPENING SESSION

It is with great pleasure that I extend to you this morning a very warm and sincere welcome on behalf of the Government and people of Jamaica to this United Nations Subregional Seminar on Science and Technology for Development.

I hope that you will get a chance not only to enjoy our beautiful climate but that this will be an occasion for you to strengthen old friendships and establish new ones.

Since I view the role of the Caribbean region as extremely critical in matters of international debate, I believe that you should use this opportunity, as members of the developing world by sharing experiences and exchanging ideas on science and technology, to come to grips with this important aspect of the development process and arrive at far-reaching and implementable decisions, for without your active participation, we will have little success with the economic, social and physical aspects of our development proposals.

International efforts to narrow the gap between developed and developing countries have met with little success during the United Nations Development Decade. This is the time therefore for us in the developing world to seriously analyse for the benefit not only of ourselves, but for the

/developed

developed countries as well, the critical and sometimes shattering influence the direct transfer of technologies can have on our fragile economics.

Jamaica has participated actively through the Group of 77 as well as at other International forums and conferences in its endeavours to achieve a New International Economic Order. For this Order to be achieved there must be improved access to patented knowledge by developing countries.

There is need also not only for the transfer of financial resources through a variety of mechanisms, but also a transfer of technology that takes into consideration the usual apparent economic advantages by the standards of the developed world and also the technical levels of competence, social and environmental consequences, to our situations.

Progress for countries such as ours cannot be measured purely in terms of GNP but must take into consideration internal equity and quality of life. Technoeconomic concept of development must include social justice, a measure of popular participation and a more orderly, selective and continuous transfer of technology from the rich to the poor countries, and from the rich to the poor within national borders.

The second development decade contemplated by the United Nations envisages that science and technology will be integrated as the major emphasis into national and international life. This, as you are aware, will be the subject for discussion during the Conference on Science and Technology for Development to take place in 1979.

/I understand

I understand that the following goals have been set for that meeting:

a) implementing strategies for the successful use of knowledge and technology to meet the basic needs of the world's poor;

b) strengthening the technological autonomy of the developing countries;

c) harnessing the potential of science and technology for the solution of global problems.

We, as developing countries, have a key role to play if these goals are to be met.

It has been recognized in Jamaica that the Scientific Research Council should play a major role in the government's development programmes. Projects are now appraised for their technical feasibility as well as economic and social viability.

The Government of Jamaica has clearly stated its commitment to democratic socialism and the changes implied in this philosophy. Scientific and technological improvements are synonymous with change, and it is up to my Government and others in the region who face the inescapable responsibility of reorganizing our societies upon acceptable foundations, to recognize to what extent science and technology permeates all societal activities. We must face the difficult challenge of managing this area by establishing rational systems to deal with it. Our proposals are to use the Scientific Research Council for this purpose.

Countries without a tradition of science and technology must strengthen their political and corporate will to generate and utilize innovative

/techniques

techniques in their every day activities. This ability to innovate must be inculcated in the reflexive through processes starting from primary school levels to the productive work site.

To incorporate a well supported scientific and technological policy with the educative and productive processes means proper planning. Historical experiences show that planning is indispensable if we are to achieve our objectives within a given time frame. Science and technology is now an integral aspect of Jamaica's planning process.

Much can be achieved at a regional level that is beneficial to us all. As a group we should strive to co-ordinate our activities in science and technology so that we can make the best use of our limited brain-power and financial resources. The region has several problems that are common and call for similar solutions.

The use of indigenous raw materials for low income housing and other construction activities, the sun for solar energy, agricultural produce for agro-industries and nutritional self-sufficiency are but a few areas that immediately come to mind. I suggest that you immediately set "in train" mechanisms to allow for the co-ordination and free flow of information among yourselves concerning scientific and technological research and development in the region.

There is no need to stress the fact that significant contributions to scientific and technological development for the region can be made by the examination of developments of other developing countries similar to our own.

/Irrigation

Irrigation methods, farm equipment, building materials, construction techniques, are a few areas that many of you will have already explored and possibly found adaptable to your needs.

Let us look within and among ourselves for what is worthy of notice and use, and not discard simple and operative techniques that have been used for centuries because of our metropolitan training and experience and the burning desire to keep up with our developed friends.

Recently, initiatives were taken in Washington by international agencies and several developed countries and countries of the region, to establish a Caribbean Group for Economic Co-operation. We welcomed this timely move since the conference addressed itself to a number of important development issues. In relation to technology the concensus document included:

a) assistance for efforts to develop local technology and to adapt imported technology to local conditions, and

b) support for efforts by the recipient countries to improve the terms on which imported technology is transferred to them.

The first formal meeting of the Group should take place in the spring of this year. I suggest therefore, that this subregional seminar should include in their deliberations these other initiatives which are being made and which can assist regional co-operation in the area of science and technology.

You may possibly wish to make a formal contribution to the proposed meeting since it is essential that groups such as yourselves project your

/policies,

policies, ideas, etc., at forums where economic crises appear to be the main problems of the region.

It is, therefore, my great privilege to wish the participants in this seminar a very fruitful interchange of stimulating ideas aimed at achieving a co-ordinated set of scientific and technological policies for the region, and to formally declare open this United Nations Subregional Conference on Science and Technology for Development.

/STATEMENT

2

STATEMENT BY MR. JURG MAHNER, REPRESENTATIVE OF THE SECRETARY-GENERAL OF THE UNITED NATIONS CONFERENCE ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

On behalf of Mr. da Costa, Secretary-General of the Conference, I wish to forward his greetings and well wishes for the success of this meeting. He, as we all here, hopes that the outcome of this meeting will be a step in the preparatory process not only of the Caribbean countries towards the achievement of the overall objectives of the Conference itself, namely:

a) to adopt concrete decisions on ways and means of applying science and technology in establishing a new International Economic Order, as a strategy aimed at economic and social development, within a time frame, and

b) to strengthen the technological capacity of developing countries so as to enable them to apply science and technology to their own development.

There are a number of other objectives, goals and subgoals for the Conference stated in various resolutions of the United Nations which I do not have to recapitulate here for this audience. Most of the participants of this meeting have been instrumental in developing these objectives and are aware of their existence and what they imply in terms of efforts of the national, regional and global level to reach them.

In spite of this, I would like to dwell on some of the tasks we are confronted with when working together to reach the objectives of the

/Conference

Conference. The preparatory process for the Conference in which meetings of this kind are important "nodal points" is regarded as an integral part of the Conference itself. In a long-term perspective the preparatory process and its continuation after the Conference in other forms may be even more important than the Conference itself. The conditions of transfer of technology, access to scientific and technological information, the international patent system, etc., will be a matter of international negotiations and agreements, but the position developing countries will take in this and their strength in the fight for increased independence and greater autonomy, individually and collectively, will greatly depend on their capacity to deal with the issues at hand. National and international efforts to build this capacity will have to be analysed foremost in the national papers. This analysis will have to include a critical look at what the United Nations system up to now has contributed to assist developing countries to build this capacity. Various agencies of the United Nations are involved in this.

As a representative of the United Nations I hope you will have a hard and critical look not only at what agencies most prominent in this field have achieved, i.e., UNESCO, UNCTAD and the Office of Science and Technology of the United Nations, but also to what extent research activities of other agencies, like the agricultural research of the FAO the medical research of WHO, etc., has contributed not only in terms of scientific results, but also in terms of

/assisting

assisting developing countries to achieve the aim of increased scientific and technological capacity. The United Nations system's activities in this field should be as critically scrutinized in this respect as you are intending to scrutinize the effects of bilateral agreements as well as the effects of the operations of transnationals and of business activities based in the north.

May I take this opportunity to state on behalf of the Secretariat of the Conference how important we feel meetings of this kind are to establish not only co-operation amongst yourselves but also to create a dialogue between the countries and the Secretariat. It is your voice we have to hear. It is your needs which continuously should be presented to the Secretariat of the Conference in order to enable us at all stages of the preparatory process to assist you as much as possible in reaching the objectives of the Conference, i.e., <u>your</u> objectives to eradicate poverty and make life liveable for the masses of people in your countries. People up to now hardly at all have benefitted from developments in science and technology and if they have, had more to suffer than to gain from these developments due to the nature of national and international mechanisms which we now are asked to attack and to change.

3

ADDRESS BY MR. A.K. VENTURA, CHAIRMAN/DIRECTOR, SCIENTIFIC RESEARCH COUNCIL, JAMAICA

We would like to make an appeal to the world scientific community to assist us in alleviating the effects of the brain-drain. A convenient way to do this would be to establish a fund to allow the developing countries to borrow back for short or long periods, some of our scientists now working in the developed areas. This fund would assist in the compilation of a directory of such third world experts, topping up salaries and providing necessary equipment and materials for the scientists to be effective in their mother countries which cradled, supported and educated them in their early years. Of course, it would be necessary for the negotiations for such scientists to be handled at the highest level within the developed countries to persuade employers to release these experts.

Another appeal to the masters of technology in the metropolitan countries is to give us a chance to develop centres of excellence for appropriate technologies in our own areas instead of erecting them in the heart of the developed world. If the genuine desire is to assist the third world, it is counter-productive to set up these centres in developed countries. Apart from the inherent incongruent nature of the exercise, if these institutions were to be successful, they would do no more than perpetuate the already stifling dependence of the developing world on exclusive foreign technologies.

/An appeal

An appeal to my regional brothers, there is need for co-operation and collaboration. The efforts to improve our conditions may be immensely enhanced if we could find convenient ways to share information, review and disseminate the traditional technologies which abound in our area and to pool resources for projects which need vast resources.

Change is needed in our small world, the time to effectuate orderly change through the power of science and technology is now. Later, undoubtedly, there will be disorderly, destructive change.

/ANNEX III

## Annex III

## STATE OF PREPARATION OF THE NATIONAL PAPERS

## 1. Barbados

A national Council for Science and Technology was formally inaugurated in November 1977 under the aegis of the Prime Minister/Minister of Finance and Planning.

The Council, among other things, has been charged with the responsibility for the preparation of the national paper on science and technology for development. The Council has recommended to the honourable Minister the appointment of a well qualified individual to prepare a first draft of the national paper. This recommendation has been accepted and a first draft is expected early in March for the consideration of the Council. At this time, a seminar will be held to involve all sectors of the scientific and technological community which will help to finalise the national paper.

The Council does not foresee any difficulties and expects to be able to meet the May 1 1978 deadline.

## 2. Cuba

A working group has been formulated presided over by the State Committee for Economic Collaboration and incorporating the State Committee for Science and Technology, the Academy of Science and the Ministry of Foreign Affairs. The group is responsible for carrying out the preparatory work for the World Conference.

This group has prepared the preliminary guideline for the national paper delegating to the State Committee for Science and Technology its formulation.

/Other

Other organizations beside those mentioned are participating in this work, trying to formulate the national paper with the highest possible standard and quality.

Moreover, an internal timetable has been approved which will permit the submission of the national paper on the established date.

## Application of Science and Technology in the Development of the Republic of Cuba

Introduction:

- Cuba, a country with a scientific tradition.
- Colonialism and imperialism. Impact on socioeconomic development and scientific and technical progress. The Pre-Revolutionary period. The dependency relationships.
- Social revolution as a pre-requisite for effective application of science and technology in Cuba.
- Progress, infra-structure and technical and scientific capacity in the present conditions.
- Plans for accelerated development in science and technology. Socialist integration.
- Comments on science and technology in developing countries. Institutional changes and forms of co-operation. Possibilities of utilizing the United Nations System and other international organizations.

### Chapter I: Science and Technology for Development

1. Selection and transmission of technology for development
   - Cuban scientific and technological experience
   - Difficulties of capitalist inheritance
   - Basis for self-development
   - Diagnosis of the present situation
   - Strategy for acceleration

/2. Elimination

2. Elimination of obstacles which hamper better use of knowledge and capabilities in the field of science and technology
   - Social change
   - Educational development
   - Training of the critical number of researchers
   - The national system of scientific and technical information
   - National policy of science and technology
   - International relations in the sphere of technology
   - Evaluation and negotiation of technologies.
3. Methods for integrating science and technology in social and economic development
   - The linkage of science-production and science-teaching
   - Present level of developments within the technical branches
   - Plan of main problems in science and technology
   - The financing of science
   - The State Committee for Science and Technology. Its main functions, work done.
4. New science and technologies to overcome the obstacles to development
   - Priority sector for application
   - Support to national programmes
   - Introduction and diffusion of scientific achievements
   - Main science and technology innovations.

/Chapter II

## Chapter II: Institutional Arrangements and New Forms of International Co-operation for the Application of Science and Technology

1. Establishment and expansion of the institutional system for science and technology

   - The System for Scientific and Technical Progress. Linkages between its integrant parts
   - National science and technology potential. Distribution by economic sectors
   - The network of Science and Technology Units. Other institutions of the system
   - Training, up-grading and re-training of scientific and technical cadres
   - Scientific categories and categories of researchers.

2. Research and development in industrialized countries related to problems relevant to the developing countries

   - The causes of the increasing difference between levels of development
   - The internationalist obligation for assistance
   - The adoption of effective measures
   - Examples of the socialist world. The CAME bilateral assistance.

3. Mechanisms for exchange of scientific and technological information and of relevant experiences for development

   - The network of scientific and technical information units. Their integration into a system
   - The national information service on licenses and patents
   - The international co-operation. The VINITI as an example
   - Need to intensify inter and intra-regional co-operation
   - The effectivity of recent efforts.

4. Strengthening

4. Strengthening of international co-operation between all countries and elaboration of new and concrete forms of co-operation in science and technology for development

   - Scientific and technical collaboration in CAME. Evaluation. Present alternatives
   - Need for joint programmes in SELA, CEPAL, OIT and other organizations
   - Collaboration and joint utilization of scientific and technical infrastructures.

5. Promotion of international co-operation among developing countries and role of developed countries in this co-operation

   - Concepts
   - The Cuban point of view
   - Measures and recommendations.

Chapter III: Utilization of the Existing System of the United Nations and Other International Organizations

- Analysis of real efficiency
- Critical points and necessary requirements
- Recommendations for some inter and intra-regional specifications
- The need to give more flexibility to the mechanisms. The strategy for acceleration
- Expected concrete manifestations favourable to developing countries.

## 3. Dominican Republic

Up to the creation in 1975 of the Scientific and Technological Unit, the agency attached to the Technical Secretariat of the Presidency, no agency existed for the coordination and planning of scientific and technological activities. Nevertheless, steps have been taken in this direction.

/The Scientific

The Scientific and Technological Unit is the focal point for the preparation of the national paper and for this task we have worked out two types of action.

As can be seen from the existing bibliography and the method of consultation with the specialized agencies for the use of science and technology, we expect that the national paper would be ready by 1 May.

The draft for the paper is now at a preliminary stage, so that at the end of the discussions it will be finalized.

The central points for the development of the paper will be:

- External factors which determine development
- Internal factors
- Selection of areas of priority up to now; as there does not exist any explicit national scientific technological policy, a relationship has been established within the global policies linking the technological factors within these policies.

## 4. Grenada

There is already in existence a number of reports on science and technology in Grenada. The draft paper is thus expected to draw heavily upon these reports. Among these are:

a) Proposed Physical Area Development Strategy 1977-1990, prepared in June 1977. This takes an in-depth look at the problems facing Grenada and possible solutions. It can be divided into three sections:

i) Survey of existing conditions and trends

ii) Analysis of physical factors of area development in Grenada and proposals for 1990

iii) Preliminary Implementation Strategy for 1990.

/b) Agro-Industrial

b) Agro-Industrial Science and Technology needs in Grenada. Here the following items are examined:

- Structure of production
- The performance of the agricultural sector
- Research, extension and development
- Agro-Industries
- Recommendations

c) Report on Marine Resources and Environmental Conservation, September 1976.

Again the present situation and potential for development are examined. The possibility of a regional programme is looked at but not in depth.

From the above and other reports the first draft will be produced. Dr. James Pitt has been working on this and plans are afoot for a team to be assigned to him. Work is expected to be finished in April for submission by 1 May 1978.

## 5. Guyana

The Government of Guyana has appreciated the need to use science and technology for the social and economic development of the country. It therefore established the National Science Research Council (NSRC) by an Act of Parliament in 1974 and recruitment for a full-time Secretariat commenced in 1975.

/The National

The National Science Research Council was identified as the focal point for preparation of the national paper for UNCSTD. After reading the guidelines for preparing the national paper it was decided that a request for assistance be made to the UNCSTD Secretariat and a consultant was recruited for this purpose.

The consultant has now paid three visits to Guyana. During the first, he met and held in-depth discussions with leading educators, scientists, technologists and engineers within Guyana; as a result of this visit a capsule of Guyana's paper was prepared. His second visit coincided with a Subregional Consultation on "Science and Technology Policy within the Caribbean", and the opportunity was taken to invite comments from both national as well as regional scientists. These comments were incorporated to form the second draft. This draft was circulated for discussion at national level at a one-day workshop which was held on 10 February and which involved 117 participants representing the various disciplines and sectors of the Guyanese population.

The composition of the Guyana delegation to UNCSTD has also been established, and is as follows:

Minister responsible for Science and Technology (Leader)

Secretary-General, NSRC

Vice-Chancellor, University of Guyana

An engineer

A Foreign Service Officer drawn preferably from the Guyana Mission to Brussels.

/It is

It is hoped that constructive comments emanating from the February 10 workshop will be incorporated into the third draft of the national paper which should be ready by 15 March.

This third draft will then be discussed by the Chairmen and rapporteurs of the various sectors during March and a final version of the national paper should be ready by mid-April, for national circulation and discussion before being forwarded to the UNCSTD Secretariat.

## 6. Jamaica

Jamaica's national paper is being prepared by the Scientific Research Council and the National Planning Agency.

The paper will deal with five broad issues:

a) a diagnosis of the country's major technological problems;

b) the need to create a coherent national S&T system;

c) the need to direct this system to the solution of the country's socio-economic problems;

d) the need to generate a national awareness of the importance of S&T, and to mobilise the country's scientific community;

e) the important areas in which international action and collaboration are required.

### a) Diagnosis of Major Technological Problems

Surveys undertaken have revealed that three broad structural and functional technological problems confront the Jamaican society, viz:

i) the country's acute technological dependency, as is manifested not only in the wholesale importation of process and product technologies by the productive sectors, but also in the country's general dependence on foreign technological solutions to its socio-economic problems.

/Associated

Associated with this, the importation of technology has militated against the development of a local technological capability;

ii) the lack of coherence in the national science and technology system;

iii) the inappropriateness of the technology that is being used by the country's productive sectors.

b) Need for a National Science and Technology System

As a result of these structural and functional deficiencies, there is a clear need to develop a coherent national science and technology system that can:

- effectively search for and select technologies that the country needs. Here technological collaboration and co-operation with other developing countries will be vital;
- acquire these technologies on terms that allow us to adapt them to our requirements;
- acquire technology that can be used in the development of an indigenous technological capability.

c) Direction of the Science and Technology System

The country not only has to develop a coherent science and technology system, but more importantly, has to direct this system to the solution of the country's most pressing socio-economic problems. These major problems have already been defined for the purposes of the next Five Year Development Plan, and short listed, include:

/- the satisfaction

- the satisfaction of the national needs of the country;
- the search for alternative sources of energy, and the reduction of the country's energy dependence;
- the provision of adequate housing;
- reduction of unemployment in the country;
- the development of the country's natural resources to provide substitutes for the goods now being imported.

A series of workshops to deal with these various matters have been organised by the Scientific Research Council, and the proposals that come out of these deliberations will provide the basis on which the country's technological effort will be mounted.

d) Mobilization of Scientific Community

It is fully recognized that development and application of science and technology can only be successful if it draws upon the combined effort of the community, and particularly the entire scientific community. Towards this end, the opinion and expertise of the scientific community is being solicited, through the organized workshops mentioned above, and through informal group discussions to be organized by the Scientific Research Council.

e) Major International Issues

It is quite clear that the application of technology for production purposes in Jamaica will be contingent to some degree on the character of the action taken at the international level to effect changes in the international technological status quo. Some of the major issues here relate to:

/i) the

i) the human resource aspect of technology, including international action to stem the brain drain from developing countries, collaboration in training and the development of the educational systems of developing countries;

ii) international action to deal with the present trade in technology, particularly to lessen the disadvantage experienced by developing countries in this trade and to develop new mechanisms for the effective transfer of technology;

iii) the development of international information systems appropriate to the needs of developing countries;

iv) the development of new mechanisms to promote effective technical co-operation among developing countries and the rest of the world.

Jamaica's position on these various issues will be elaborated in the national paper that is now being prepared.

7. Trinidad and Tobago

The National Council for Technology in Development (NCTD) has been charged with the responsibility of preparing the national paper for the United Nations Conference on Science and Technology for Development.

The NCTD has commissioned the Caribbean Industrial Research Institute, a national institution, to prepare the first draft of the paper.

/The time

The timetable is that the first draft is to be considered by the Council by the end of February - the plan is then to hold a series of workshops involving the wider scientific and industrial community. The national paper will draw heavily on a White Paper which has recently been issued by the Government of Trinidad and Tobago entitled "White Paper on National Institute of Higher Education (Research, Science and Technology)". This White Paper was prepared by an Inter-Ministerial Committee chaired by the Prime Minister and included two members of the NCTD. The White Paper assesses the present status of science and technology in the following terms;

"Trinidad and Tobago's existing status (in science and technology) is characterized by many factors common to the emerging countries. The main characteristics, as summarized by the Prime Minister in his 1976 proposals on technology, are:

- absence of a policy for technology related to national objectives;
- a complete lack of co-ordination of the national efforts in technology;
- the growing tendency towards individual efforts of both persons and organizations;
- the proliferation of new institutions, new advisory groups, councils, committees, etc.;
- lack of relationships between the education plan and national needs;
- lack of a coherent plan for education oriented towards technology;

/- absence

- absence of an environment that places science and technology in its proper perspective;
- a continuing and increasing dependence on imported technology with all the worst features of the traffic in technology;
- limited initiatives in research and development;
- complete neglect by national business of research and development; it hardly ever appears as a legitimate cost in local operations;
- the brain drain;
- an almost static picture in the level of technology;
- a growing deterioration in the level of technology in certain areas, e.g., road maintenance and production of certain agricultural crops in which there was originally reasonable level in indigenous technology.

"The major reasons for this unsatisfactory state lie with the historic development of these various activities, leading to a pattern which continues to exist. These various activities (Research and Development, Science and Technology Services, and higher Technical Education) were influenced on the one hand by the establishment of the University of the West Indies and on the other, by the absence of any meaningful indigenous activities, within the private sector, in this area. Substantial resources were channelled into the University, with the hope that its efforts in the medical sciences, engineering, education and management would be adequate to meet the demands of the country. The industrial sector, dominated by the transnational corporations, relied exclusively on imported technology for its own use. Such foreign knowledge was applied without being absorbed by the internal technological infrastructure".

/The paper

The paper also refers to recent action on the part of the Government of Trinidad and Tobago to remedy this situation.

"The Government has already taken definite steps in these directions. The most noteworthy of these are:

a) Establishment of the National Council for Technology in Development;

b) Establishment of the National Co-ordinating Council for Training;

c) Adoption of the Prime Minister's proposals on education leading to the introduction of senior secondary comprehensive schools;

d) Acceptance, in principle, of a limited expansion programme at the Faculty of Engineering, UWI, and direct unilateral support for limited post-graduate programme in certain technological fields;

e) Establishment of a fund for repatriation of experienced and qualified nationals;

f) Rating science and technology as one of the priorities for 1977 and onwards in the 1977 Budget Speech;

g) Creation of an inter-Ministerial Committee to consider the rationalization of the national effort in science and technology and specialized training."

The White Paper then deals mainly with institutional arrangements for research, development and training in the area of science and technology. It refers to the substantial expenditure in these areas over the last 10 or 15 years and to projected expenditure for the next few years.

/The main

The main conclusions of the paper are that institutes have been created in an ad hoc and un-coordinated fashion; some national, others regional and some involving collaboration at the international level (with UN agencies).

The main recommendations of the paper concern the creation of a single institution to be named National Institute of Higher Education (Research, Science and Technology) which will bring together all the existing institutions concerned with science and technology and training.

Some existing organizations to be incorporated into the proposed National Institute of Higher Education (Research, Science and Technology):

- Caribbean Industrial Research Institute
- Metrication Board
- Standards Bureau
- Institute of Marine Affairs
- Central Experiment Station (Ministry of Agriculture)
- Institute of Petroleum
- Eastern Caribbean Institute for Agriculture and Forestry
- John S. Donaldson Technical Institute

Regional institutes to be associated with the efforts in science, technology and higher education:

- The University of the West Indies
- Caribbean Agricultural Research and Development Institute
- Caribbean Epidemiological Centre

The institute is to be structured in three main divisions: Research and Development, Extension and Training.

/The creation

The creation of an Extension Division indicates the need to bridge the gap between research and absorption by the productive sector of technology.

A separate section of the paper deals with UWI and proposes a change in structure which will retain the regional character of the University while allowing the University to play a more significant role in the area of science and technology in Trinidad and Tobago.

UWI is a substantial and costly resource which is a useful vehicle for regional co-operation, but which must also be utilized for national development; the White Paper attempts to reconcile these two objectives which are sometimes in conflict.

As far as the national paper is concerned, therefore, Government policy with respect to institutional arrangements for Research and Development activities, Extension and Training have been specified and are out for public comment. One aspect of the national paper which is now being concentrated on, is the functioning of this institutional framework in

a) development of indigenous technology;

b) monitoring and controlling the transfer of technology, and

c) influence of a) and b) on the development process.

These will be discussed against the background of Trinidad and Tobago's particular economic circumstances with a locally available

/energy

energy source (oil and natural gas) and the developments now in progress for energy-based industries of iron and steel, fertilizer, alumina smelter and petrochemicals.

These will be the lead industries with a consequent broadening of the industrial sector and a companion intensification of development in the agricultural sector.

/Annex IV

## Annex IV

## TECHNOLOGY TRANSFER AS AN EXERCISE IN SOCIAL INTELLIGENCE

### 1. One Prediction, Two Suggestions and One Hypothesis

For the next twenty years every country in the Caribbean, from Cuba to Grenada, will have a negative technological balance of payment. Each will have to import more technological hardware and know-how that it will be exporting, even under the assumption that it will develop its own innovative capacity in technology and science in the most efficient way.

I suggest that your regional paper for UNCSTD:

a) Contain a table comparing for, let us say, 1976, the technological balance of payment for various countries;

b) Using "Licensing Guide for Developing Countries", WIPO, 1977, as a model, give examples in the paper of successful and unsuccessful licensing and technology transfer arrangements your country had. Describe a project for one or two PhD studies of technology transfer policy based on your past experience and on the "Licensing Guide" as criteria for success and failure estimates.

If a thorough comparative study is made of technology transfer among the socialist countries and among those of other social systems, it is my hypothesis that a great deal of similarities will be found among the cases of successful and unsuccessful technology transfer cases.

/2. Secrecy

## 2. Secrecy as a Resource for Success and for Stagnation

Applying systematically the "Licensing Guide" or other similar "know why" models for technology transfer will not eliminate your negative technological balance. What it will do, if applied properly, is to save you considerable resources in the purchase of technology, it will help you acquire technology appropriate to your needs. The guide deals only with one aspect of technology transfer: license acquisition. It describes the process of acquiring technology (T) as consisting of the following phases:

- identification of T needs
- obtaining of information on T alternatives
- dissemination of information
- evaluation and selection
- unpackaging of T
- negotiation
- adaptation and absorption
- exploitation and utilisation

As the Guide shows throughout its 150 pages technology transfer is transfer, disclosure of secret know-how, secret technological information and hardware for payment of some kind. The processes of production of technology and sciences are among the most competitive human activities based on intense social collaborative processes. This is true of the basic research, witness the discovery of the structure of DNA molecule as described in "the double helix" of Watson. This is shown in the case of the fact that last summer, the Coca-Cola Company closed its lucrative India market rather than reveal the secret of its product at the request of the Government of India as a condition for staying on the market.

/The "Licensing

The "Licensing Guide" deals not only in its Section G, (paragraphs 238-299) but throughout its pages with the problems involved in the disclosure of secret technological information and secret know-how in the process of negotiating a license agreement. The acquisition of these secrets is the key to success of the technology transfer. These are examples of use of secrecy as a resource of success.

But secrecy can be a hindrance to success. Secrecy can lead to stagnation of a social system by preventing it to discover its own internal and external problems and to find ways to deal with them. A fear was expressed at this meeting that publicity of a list of experts of a country can be harmful. I promise that under my instructions a bright student can find in four hours of work in a good science and technology library the experts from any country represented here in any given field whatsoever.

3. "Intelligence Is the Light of the State", F. Bacon 1592
"Intelligence Is the Soul of All Public Business", A. Defoe, 1712

The application of "The Licensing Guide" is not enough. Before, during the negotiation for a license and after signing the agreement, a wise technology purchaser will have to do his intelligence homework. How this can be done is described, for example, in the lecture of Mr. Mike West, Director of the Economist Intelligence Unit of London, at a wholeday seminar on Economic, Commercial, Business Intelligence, held during my

/Social

Social Intelligence Course in Lund. M. West's is one among hundreds of papers and books I have gathered in my institute in Lund University on the subject to be used by anyone interested. Note the similarity in M. West's description of the intelligence and the technology transfer processes as described in "Licensing Guide"; "Intelligence is a meaningful statement derived from information which has been selected, evaluated, interpreted and finally expressed so that its significance to policy problems is clear". Intelligence is a process which uses secrecy and confidentiality as a resource and serves as an early warning system of possible threats and opportunities, in our case, in any technology tranfer and transaction. M. West then describes the art of gathering, processing information from about a dozen kinds of open sources in order to obtain intelligence relevant about a single product or sector.

## 4. Spying in UNESCO's Spines

Social intelligence is a new subject of study made necessary by the rapid development of the knowledge industry, the science and technology revolution and the rise of a greater self-reliance of interdependent social systems. The developed countries regardless whether socialist or capitalist, have used economic, technological, scientific, cultural intelligence to advance their goals. It would be a pity if the pseudo-scientific norms or academic susceptibilities prevented the less developed countries to develop these tools.

/Three months

Three months ago, Mr. A. Cox and Don Price made a report to the President of Harvard University on the rules to govern the relations of its university teachers and researchers with the U.S.A. intelligence agencies. The Moscow University does not preach what it practises, but I am certain that its scholars, teachers, scientists and technologists are not less patriotic than those of Harvard. So it is time that the representatives of less developed countries start calling a spade a spade and see how that spade works. One interesting support for this, they will find in the recent UNESCO "spines" thesaurus of 400 descriptors of science policy terms. About 40 of these descriptors as I have pointed out in my lectures, deal with knowledge, information, intelligence, military intelligence, technological intelligence, economic intelligence and espionage.

5. What can make Anansi Fat?

In the world dominated by eagles, bears, wolves and tigers, the weak and skinny Anansi must learn to use better than others its resources of intelligence, imagination and discretion, in technology transfer as in anything else.

/Annex V

## Annex IV

### LIST OF DOCUMENTS

1. United Nations Conference on Science and Technology for Development. Background, objectives and regional implications (CEPAL/MEX/ELCT/2)

2. Recommendations approved by the Latin American Meeting of Intergovernmental Experts on Science and Technology for Development (CEPAL/MEX/OCT/78/1)

3. Suggested structure for the preparation of the Nation Reports (CEPAL/MEX/OCT/78/3)

4. Abstracts of the XXIII session of ACAST (CEPAL/MEX/OCT/78/4)

5. Comparative analysis of the study area selected by the five Regional Economic Commissions

6. Selected Subject Areas for UNCSTD

7. Statement presented by Mr. Joao F. daCosta, Secretary-General of the United Nations Conference for Science and Technology at the Latin American Expert's Meeting held in Mexico City

8. Report of the Latin American technical Seminar on Technological Information contained in Patent Documents, held in Mexico City

9. Progress report of the Secretary-General of the Conference (A/Conf. 81/PC.3)

10. Statement by the Secretary-General of the Conference at the opening meeting of the second session of the Preparatory Committee for the UNCSTD (A/Conf. 81/PC/L.2)

11. Draft resolution submitted by the Chairman as a result of informal consultation held on the draft resolution contained in document A/Conf. 81/PC/L.5 (A/Conf. 81/PC/L.6)

12. Draft resolution submitted by the Chairman as a result of informal consultations held on the draft resolution contained in document A/Conf. 81/PC/L.8 (A/Conf. 81/PC/L.12)

13. Caribbean Council for Science and Technology. A feasibility study (UNESCO/NS/ROU/399 Prov. 3)