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ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN  
Subregional Headquarters for the Caribbean

CARIBBEAN DEVELOPMENT AND COOPERATION COMMITTEE

CARIBBEAN COUNCIL FOR SCIENCE AND TECHNOLOGY

Tenth Plenary Session  
Basseterre, Saint Kitts and Nevis  
23-24 September 1991

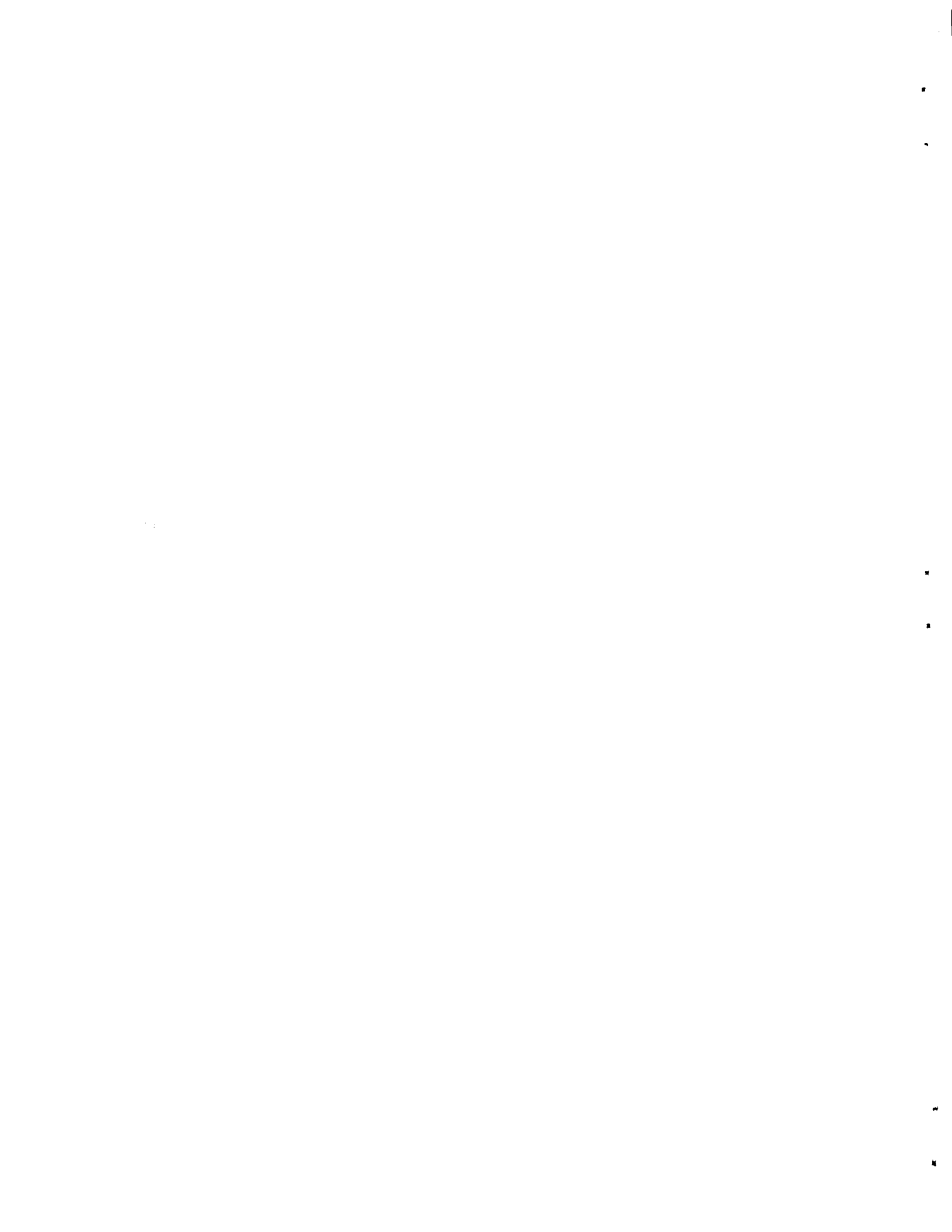
MINUTES OF THE TENTH PLENARY SESSION  
OF THE CARIBBEAN COUNCIL FOR SCIENCE AND TECHNOLOGY (CCST)

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UNITED NATIONS

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I. ORGANIZATION OF THE MEETING

1. The tenth Plenary Session of the Caribbean Council for Science and Technology (CCST) was convened in Basseterre, Saint Kitts and Nevis from 23-24 September 1991.

Opening session

2. The Chairman of the opening session, Dr. Milton Whittaker of Saint Kitts and Nevis, welcomed participants to the meeting.

3. In his address as Chairman of CCST, Dr. Gladstone Taylor, Jamaica, outlined CCST's activities and achievements since its inception. He noted, however, that the Council had not yet provided the engine to propel the region's efforts in science and technology into the twenty-first century. He advocated using a corporate approach to science and technology. The basic elements of such a corporate plan would provide a secure foundation for scientific and technological growth, encourage strategic development of industrial technology and stimulate the creation of a favourable climate for science and technology. The Chairman's address is given at Annex I.

4. The meeting was opened by the Minister of Education of Saint Kitts and Nevis, the Honourable Sidney Morris. In his address, the Minister endorsed the CCST Chairman's comments and spoke of the critical role of education in the training of scientists and technologists. He called for a change in attitude towards education to encourage collaboration between the public and private sectors, the community, NGOs, parents and students. He advocated strengthening of management capabilities among policy-makers and urged for closer collaboration among member countries to avoid duplication of efforts and to work towards achieving the critical mass necessary for effective development of the region's resources.

5. In his vote of thanks, Mr. Donatus St. Aimee of ECLAC noted that the end result of the utilization of science and technology should be the advancement of society for the betterment of people. To that end ECLAC will work closely with CCST to enable the Council to achieve its objectives, which objective is also the mandate of ECLAC.

### Attendance

6. Representatives from the following CCST member countries were present: Antigua and Barbuda, Belize, Cuba, Grenada, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago.

7. Puerto Rico, an associate member of the Caribbean Development and Cooperation Committee (CDCC) was also present.

8. The following organizations attended as observers: Caribbean Agricultural Research and Development Institute (CARDI), Caribbean Community Secretariat (CARICOM), Caribbean Development Bank (CDB), United Nations Educational, Scientific and Cultural Organization (UNESCO) and United Nations Industrial Organization (UNIDO).

9. The United Nations Economic Commission for Latin America and the Caribbean (ECLAC) Subregional Headquarters for the Caribbean, which serves as interim secretariat to the CCST, provided secretariat services for the meeting.

10. The list of participants is given at Annex II.

## II. SUBSTANTIVE DISCUSSIONS

### Adoption of the agenda (Agenda item 1)

11. The proposed agenda was amended subsequent to discussions and the following changes made:

12. Agenda item 2 " Admission of new member" was removed because of the absence of the intended delegate of United States Virgin Islands. A new item was included: Minutes of the ninth Plenary Session.

13. In recalling the decision of the ninth Plenary Session to extend the term of office of the Executive Committee to three years, the representative of Cuba moved for the removal of item 7 "Election of Officers to the Executive Committee 1991-1994". He also noted that articles of the Statutes did not consistently reflect amendments made. A decision was taken that this matter be included as an agenda item for the next Executive Committee meeting.

14. Item 7 was replaced by a new item "Examination of the Structure of the Council".

15. The agenda as amended was then adopted and appears as follows:
1. Adoption of the agenda
  2. Minutes of ninth Plenary Session
  3. Report on CCST activities 1990-1991
    - (i) Work programme
    - (ii) Budget performance
  4. Topic for general discussion - A Technology Extension Service: How it can work
  5. CCST work programme 1991-1992
  6. Secretariat for the CCST
  7. Examination of structure for the Council
  8. Date and venue for eleventh Plenary Session
  9. Date and venue for twelfth Executive Committee meeting
  10. Any other business

Minutes of the ninth Plenary Session  
(Agenda item 2)

16. The document "Minutes of the ninth Plenary Session of the Caribbean Council for Science and Technology (CCST)" LC/CAR/G.310 having been circulated previously was tabled for discussion.

17. In response to questions from Grenada on the activity "The Evaluation of National Science and Technology Consultations" (para. 17) it was pointed out that since consultations in Saint Kitts and Nevis and Belize had not been held, this activity was deferred pending their completion.

18. The representative of Cuba pointed out that two decisions of the Plenary Session, namely, a meeting of the Executive Committee and a meeting of the Core Group for the history of science and technology had not been held. He expressed the view that unless decisions taken at Plenary Sessions were carried out, plenary sessions would lack validity and urged that the meeting of the Core group be held to enable the project on the history of science and technology to move forward.

Report of CCST activities 1990-1991  
(Agenda item 3)

19. In introducing this document the interim secretariat made the following observations:

(a) Given the officer's dual role as Secretary of the Caribbean Development and Cooperation Committee (CDCC) and his responsibility for science and technology, and his absence from Port-of-Spain on mission to Haiti, insufficient time had been spent on science and technology.

(b) The need for strengthening the Council was evidenced by the minimal activities undertaken during his absence.

(c) Upon his return a considerable amount of time was directed towards writing projects and identifying funding agencies. One such activity was a compendium of organizations and institutions involved in science and technology which was prepared and circulated and would be updated periodically.

(d) The Technology Extension Service project was developed, with UNIDO having funded phase I. The report from UNIDO on this phase was still pending.

(e) Council members, particularly those in arrears, were urged to meet their financial commitments to the Council since payment of contributions might be perceived by funding agencies as a reflection of support by member countries for the Council and its activities. In this context, the foreign exchange difficulties experienced by some member countries were noted.

20. Noting that the United States Virgin Islands had submitted Instruments of Ratification of the Statutes of the CCST, the delegate of Antigua and Barbuda enquired on the status of the Netherlands Antilles. He also asked for more information on the meeting on technological policies to be hosted by the Government of Colombia, and on the National Science and Technology Consultation for Belize. In response, the secretariat replied that the Government of the Netherlands Antilles had not yet submitted Instruments of Ratification. The secretariat referred the meeting to a document presented to the Plenary Session by the secretariat. "Comments on the proposed Latin American and Caribbean meeting on Science and Technology Policies" and stated that the meeting was now tentatively rescheduled for 22-24 October 1991.

21. The Belize National Science and Technology Consultation was tentatively scheduled for 6-8 November 1991 and further discussions would be held informally with the representative of Belize during the course of the Plenary Session.

Topic for general discussion -  
A Technology Extension Service, How it can work  
(Agenda item 4)

22. In introducing this topic, the secretariat outlined the background to the formulation of the project and suggested mechanisms for its execution.

23. In commenting on the project, the UNIDO representative informed the meeting that the report on phase I of the project would soon be received by UNIDO and would form the basis for the re-writing of a project for submission to the Governments of the Organisation of Eastern Caribbean States (OECS). UNIDO would consider sourcing funds upon endorsement by OECS governments.

24. A general discussion followed in which members endorsed the project proposal.

The following observations were made, however:

(a) The parameters of the project and the involvement of existing institutions as identified in the proposal needed to be clearly defined.

(b) Terms of Reference for extension officers must be clearly defined and an evaluation system instituted to monitor their work.

(c) Careful project design and selection of extension officers were crucial to the success of the project.

(d) In formulating the project, a priority area for activity should be identified in each country and an extension officer selected with skills in that area, since it would be unlikely that any one person would have skills in the range of industries likely to use the service.

25. There was concern that the project was perhaps too ambitious. The focus should, therefore, be narrowed to make it more realistic.

26. In concluding discussions, the Chairman proposed that the project proposal be accepted in principle, but be referred to the Secretariat for consideration of the points raised at the meeting into its further development and that in such further development the Secretariat should seek collaboration with UNIDO towards a regional project. This was endorsed by the meeting.

27. The representative of Puerto Rico was invited to address the meeting, since a proposal presented by that country to the CDCC had been referred to the CCST.

28. The proposal, presented to the Council, was contained in a document entitled "Views related to Puerto Rico's role and contributions in furthering Caribbean Basin Economic Development through the application of Science and Technology" and dealt with developing technology transfer and technology extension activities in Puerto Rico and throughout the Caribbean region.

29. The Puerto Rican representative shared the experiences gained through the establishment of the Corporation for Technological Transformation (CTT) and distributed literature on the Corporation. The CTT was established to act as a technology transfer agent; stimulate enterprises based on productive technology and catalyze the modernization of existing establishments. He drew parallels between the problems he had encountered and some likely problems of the Technology Extension Service project. He concluded by welcoming an invitation to become a member of CCST and by offering Puerto Rico's assistance in the following areas:

(a) To work as a host or liaison for CCST in locating funding.

(b) To host a meeting of CCST in Puerto Rico including networking with other organizations in Puerto Rico.

(c) To organize and sponsor seminars, technical conferences etc., for CCST in cooperation with the Corporation.

(d) To provide, through The Global Information Group Incorporated (GIGI), an information management support system.

(e) To make resources available to CCST on request, as appropriate.

(f) To support proposals for projects in joint ventures, as well as provide resources and coordinate projects.

(g) To assist in seeking project funds from other areas.

(h) To provide coordination between CCST and the private sector in Puerto Rico.

(i) To present for consideration through funds available for research and development projects from taxation of 936 corporations, appropriate projects of the CCST or individual member countries which can be implemented in collaboration with Puerto Rican institutions.

(j) To extend invitations to visit member countries and share information on experiences with them.



30. The Council listened with great interest to the presentation by Puerto Rico and expressed its appreciation for these offers of collaboration. It mandated the interim secretariat to organize a visit to Puerto Rico by a representative group of the Council to followup on the initiatives proposed.

CCST work programme  
(Agenda item 5)

31. The interim secretariat introduced the proposed work programme as presented in document LC/CAR/G.336 and its addenda "Comments on the proposed Latin America and the Caribbean meetings on Science and Technology policies" and the project on "The History of Scientific and Technological Development in the Caribbean".

32. The suggestion was made to the Council that its proposed activities should be submitted to organizations to allow enough time for inclusion of some of those elements requiring collaboration into the organizations' own work programmes. This might then ensure participation by other bodies in CCST's activities and facilitate greater implementation of those activities.

33. CCST itself need not, then, implement all its proposed activities but serve as a mechanism through which activities might be implemented by other organizations.

34. In the discussions on the History of Scientific and Technological Development of the Caribbean, Cuba offered to serve as coordinator for the Core Group and to develop a plan of action and suggested that a meeting of the Core Group be held in conjunction with the next Executive Committee Meeting. It was suggested that the Core Group could address strategies for encouraging member countries' participation in implementing the Core Group's activities.

35. Puerto Rico expressed great interest in this activity since it was involved in a similar undertaking and offered to serve on the Core Group and to provide resources towards the project.

36. Discussions on the project revealed concerns about its scope and limits. It was agreed that this would be further defined by the Core Group which should focus its discussions on the scope of the project. The suggestion was also made that pending the completion of the project, information gained while conducting the research should be released, perhaps in a serialized form using the CCST Newsletter. This would serve to both stimulate interest in the project and popularize it, particularly among youth. CARDI suggested that the project should also focus on highlighting the work of eminent regional scientists.

37. The Council accepted Cuba's offer to serve as Coordinator of the Core Group. It also accepted Puerto Rico's offer to assist in the project and serve on the Core Group.

38. The secretariat was asked to enquire whether Dr. Trotz, the former Guyana council member, would still serve on the Core Group since he was now at the Commonwealth Science Council.

Dr. Desmond Ali (Trinidad and Tobago) and Mr. Aloysious Barthelmy (Saint Lucia), check who were not present at the meeting but had previously been named to the Core Group, should also be asked whether they would still serve. The other members of the Core Group would now comprise: Cuba (Chairman), Jamaica, Puerto Rico and UNESCO.

39. The Council agreed to a suggestion by Cuba that "The History of Science and Technology in the Caribbean" be included as the agenda item "Topic for general discussion" at the eleventh Plenary Session.

40. There was much discussion on the proposals contained under the heading "Activities coming out of the draft science and technology policy for the Caribbean" namely, the development of a series of workshops to increase the exposure of students at both primary and secondary school levels to science, technology and mathematics. It was suggested that CCST should address the philosophy of science education and not just an examination of curricula and teaching methods.

41. The Council's proposed activities were welcomed and seen as a step towards integrating the element of education in science policy. The Council should collaborate and create linkages with other national and regional bodies involved in this issue to develop the workshops. CCST should also disseminate the results of the recently concluded meeting of the Association of Science Education of Trinidad and Tobago (ASETT) held in Trinidad and Tobago in August 1991, to members of the Council.

42. CARDI noted that the environment was a major direction of science and technology focus in the region and suggested that the Council should play a more active role in this area to further the Council's mandate of popularizing science and technology.

43. In general discussions on the work of the Council it was suggested that members should send information to the secretariat for dissemination to other members in order to create an information flow and increase the Council's profile among decision-makers.

44. The Chairman referred to suggestions made in his report for new activities for the Council. It was decided that the Executive Committee would prioritize the Council's proposed activities including the recommendations made by the Chairman in his opening

address and determine details of the projects and their implementation.

Secretariat for the CCST  
(Agenda item 6)

45. The Chairman introduced the agenda item and called attention to the documents relating to the establishment of a permanent secretariat for CCST: "The Establishment of the Secretariat of the Caribbean Council for Science and Technology" (CCST/89/1); "Minutes of the ninth Plenary Session" (CCST/90/6); "Report to CDCC on Activities of the CCST for the period of 1984-1990" (LC/CAR/G/320); "CCST Work Programme 1991-1992" (LC/CAR/G/336); "The ninth Annual Report of the Caribbean Council for Science and Technology" (LC/CAR/G.337); "Proposal for Improving Secretariat Service Level of the CCST" (CONS/90/1) and a document entitled "Guidelines for a Secretariat for CCST". He said that the item had been extensively discussed as evidenced by the documentation. He urged the meeting to arrive at a decision as mandated by the CDCC at its last session.

46. In updating the meeting as requested, the ECLAC representative indicated that ECLAC's commitment to the CCST secretariat might not necessarily be maintained should the secretariat move from ECLAC, Port-of-Spain. He reiterated that the post of Secretary, CCST does not exist at ECLAC. There is, however, provision for a Science and Technology Officer in ECLAC which services the CCST on an interim basis.

47. He presented the following scenarios as presented in document CCST/89/1:

(a) The secretariat could remain in ECLAC, since a full-time post for science and technology has now been assigned.

(b) The secretariat could be shifted to a host country.

48. In the second scenario the country might have to bear all costs associated with maintaining the secretariat or efforts would have to be made to obtain funding from international agencies.

49. He pointed out that the decision for a secretariat should be guided by the considerations of: (i) the long-term viability of the Council; (ii) payment of salaries for core personnel; and (iii) the unwillingness of funding agencies to finance salaries for core personnel.

50. The Government of Jamaica presented to the meeting a formal letter of intent to host the secretariat.

51. Antigua and Barbuda reiterated its offer, first made at the thirteenth session of CDCC held in Jamaica, July 1991, to host a secretariat for CCST.

52. The delegate of Saint Lucia also made an offer to the meeting to host the CCST secretariat, subject to the availability of funding for staff support and approval by Cabinet.

53. In the discussions that ensued, concerns were expressed about the interim secretariat's inability to fully address the CCST work programme within the present structural arrangement.

54. Concerns were also expressed about funding for the work of the secretariat and the organic linkages between CCST, CDCC, ECLAC and other supporting agencies. Delegates were also in agreement that member countries' contributions should not be increased, nor funds diverted from projects as a result of any arrangements regarding the secretariat.

55. After much discussion the delegate of Cuba moved a motion, seconded by the delegate of Grenada that the present situation regarding the interim secretariat should remain pending a review of the Guidelines for the Establishment of a Permanent Secretariat by the Executive Committee which should take into consideration in their review size and cost of staffing, alternative locations and financing. This motion was supported by a majority of delegates with the representative of Jamaica stating his disagreement to the proposal.

Examination of structure for the Council  
(Agenda item 7)

56. In introducing this agenda item, the Chairman indicated that over the years several of the proposed activities in the Council's work programme have not been achieved, and attributed this to inter alia:

(a) The lack of permanence of the secretariat.

(b) The lack of accountability for decisions taken at plenary sessions and imposed on the secretariat.

(c) The inadequate staffing of the secretariat.

57. He further stated that the Council was perceived as a body which met once a year and put up motions with no tangible results.

58. The Council should be an expert advisory body. The Chairman suggested that in order to be more action-and results-oriented, the activities in the Council's work programmes should be allocated to

small sub-committees which would have responsibility for ensuring that the functions of the Council were expeditiously implemented.

59. After some discussion the Council agreed that the Executive Committee should examine the proposals and should put forward concrete recommendations for discussion at the next Plenary Session.

Date and venue for eleventh Plenary Session  
(Agenda item 8)

60. It was agreed that the secretariat, after due consultation, would indicate the date and venue for the eleventh Plenary Session.

Date and venue for twelfth Executive Committee meeting  
(Agenda item 9)

61. The Chairman and Secretary would decide on an appropriate date and venue for the twelfth Executive Committee meeting.

62. Under this agenda item, the question of the election of new officers to the Executive Committee was raised. It was agreed that attempts would be made to clarify the status of two previously named members of the Executive Committee.

Any other business  
(Agenda item 10)

63. The representative of Antigua and Barbuda informed the meeting of an upcoming Organization of American States (OAS) Workshop on "Food Preservation and Dehydration" proposed for 2-6 December 1991 at the University of the West Indies (UWI), St. Augustine Campus.

64. The Director of the Caribbean Conservation Association (CCA), Mr. Calvin Howell, briefed the Council on the development of the Eastern Caribbean Country Environmental Profile Series. He indicated that detailed environmental profiles had been completed for: Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines and for ease of reference a document containing a synthesis had been produced. This document entitled "Environmental Agenda for the 1990s" was launched at a meeting being held concurrently with the CCST Plenary Session in Saint Kitts and Nevis. He indicated that his association would continue to maintain close linkages with CCST.

65. It was agreed that the Council's support of the Technology Extension Project should appear as a formal decision of the meeting in order to reflect the importance which member countries attached to that project.

## CHAIRMAN'S REPORT

Distinguished representatives of the various territories, other distinguished guests, ladies and gentlemen,, it is my great pleasure to address you as President of the CCST. Normally a presidential address such as this would dwell on or consist mostly of a report on the activities of the CCST. However, this is a matter which will later form the subject of extensive discussions by the Plenary at which time the entire Work Programme will be extensively debated. I will therefore briefly indicate, for the benefit of those who are here, but who will not form part of the later discussions, some of the activities undertaken by the CCST in its work programmes. Originally seven projects were undertaken:

- (i) Assessment of National Science and Technology Capabilities;
- (ii) Establishment of a Science and Technology Journal;
- (iii) Preparation and Exchange of Audio-visual Material for Education in Science and Technology;
- (iv) A Study of the Consequences of the Development of Energy Crops and Food Supplies in the Region;
- (v) Development of Agro-industries and employment opportunities, particularly at the rural level;
- (vi) The potential and Limitations of Newly Emerging Technologies for Developing countries;
- (vii) A Science and Technology Policy for the Caribbean.

This last project has potential significance for the entire region in terms of integration and development.

Some other important activities which have been initiated include:

- (i) A bimonthly newsletter, which has significant impact, because it is an informal publication;
- (ii) Science and technology popularization activities including films production, training workshops on television production materials, science writing and communication and science education and research.

National consultations on science and technology were also promoted, supported and facilitated by the CCST in many of the territories. The Plenary Session will in fact be followed by one right here in Saint Kitts and Nevis.

As a way of communicating national S&T information, the CCST Plenary Sessions since 1985, have promoted in depth discussions on at least one critical issue. These have included such topics as "Utilization of Natural Resources in the Region", Biotechnology" and the "Environment".

Specialized working groups have also been set up in the following areas:

Energy Transfer of Technology and Patents;  
Information Systems; Agricultural Research;  
Marine Affairs; Health and Nutrition and Pharmaceuticals;  
Newly Emerging Technologies, to name a few.

CCST has also provided technical assistance whenever possible.

The CCST has assisted in identifying sources of funds for regional projects, the development of an updated skills bank; collating and disseminating information already available in the region; undertaking a short inventory of research in progress in the region. The Council is undertaking to promote a symposium on the management of R&D in the Caribbean drawing on the experience of the Scientific Research Council (SRC) in Jamaica, the Caribbean Industrial Research Institute (CARIRI) in Trinidad and Tobago, the Institute of Applied Science and Technology (IAST) of Guyana.

Two new projects bear mentioning. These are:

- (a) **A Science and Technology Extension Service**  
This is intended to be an effective community development tool with the long term objective to facilitate small business development programmes.
- (b) **The History of S&T in the Caribbean**  
The output of this project will be a document which highlights the achievements in S&T of all member countries. It is hoped to identify the factors or variables that have shaped the perception of science and technology in the region and to devise means to change these so that science and technology can have a more meaningful role in the development process of the region.

The Council has in the past and will in the future continue to collaborate on certain activities with a number of agencies in the region, such as CARICOM, the University of the West Indies, the newly formed Caribbean Academy of Sciences, UNESCO, and FAO. That, ladies and gentlemen is a highly encapsulated report on the



activities of the CCST. However, from these widely ranging activities, it can be readily seen that the CCST has significantly contributed to the advancement of S&T in the region. Where it has not actually implemented, the Council has played a facilitating and catalytic role in critical S&T areas. Although severely limited by scarce financial resources, the Council has nevertheless galvanized S&T activities which have had numerous beneficial spin-off effects on most territories in the region. We know of the potential of the Council - in some cases it has transformed such potential into reality both by its dealings with issue/areas and by bringing issues to the attention of organizations with competence to deal with the issues.

At all its meetings, representatives continue to believe that because of the wide membership of the Council, it potentially represents the scientific strength of the region and is the institution most suitable for S&T development.

Much of what can be expected from the Council however remains at the level of potential. Its actual impact and achievements measured against this leaves much to be desired. It has not yet taken shape as the major engine which must propel the region's S&T development into the fast approaching 21st century.

Ladies and gentlemen, colleagues, science and technology are to modern life what the hands are to the body. They are used to harness the forces of nature and to transform the raw resources with which nature endows men, into goods and services for a better quality of life. Indeed the wealth, influence and power in the world political scene of any nation depends on her capacity and capability to utilize science and technology for socio-economic development.

The richest countries are those that have best been able to advance scientific knowledge, and to use technology to generate wealth. Developing countries of the Third World, many of which depend on primary products for economic viability, are threatened by the newer technology-driven methods of production, as well as the substitute use of raw materials. Furthermore, our traditional advantages of relatively cheap labor are being undermined by computer-assisted manufacturing and robotics.

To meet these and other challenges, the countries of the Caribbean region must build regionally and nationally, substantial S&T capabilities. And to the extent that we are successful in this, we will become greater competitors in the world markets. One of the factors in this success, I believe, must be the CCST.

Ladies and gentlemen, much has been said about S&T in the region, but relatively little has evolved into action both by those who have the power to do so, the policy makers, the governments, and those who have the ability and capability to do so, the

scientists and technologist. Perhaps a new approach is necessary to get things going and in this respect I am going to suggest one possibility and identify a key role for the CCST. The suggestion I would like to make is to treat S&T with a "corporate approach" on a regional level. The corporate concept would involve the clear statement of the major elements of a specific policy. I suggest that these elements should be:

Provision of a secure foundation for scientific and technological growth;

Strategic development of industrial technology;

Creation of a favorable climate for science and technology.

May I suggest ladies and gentlemen that this could form a broad mandate for the CCST and the first step to achieve these would be corporate planning for S&T development.

Planning is crucial to the successful implementation of all our S&T plans. Planning implies, among other things, the capacity to organize for the conceptualization phase as well as for the implementation phases, the capacity to make choices that will take time to yield results, the capacity to make choices, reasonable and independent, on matters of S&T for development; the capacity, in the current language, to manage technological change.

To demonstrate that planning S&T in the region is a critical activity for development, we only have to look at a few factors. For example, at the falling productivity of most of our countries of the region; at the systematic erosion of metropolitan markets for traditional regional products, such as sugar, bauxite, citrus and agriculture; at the gradual loss of the comparative advantage with respect to labor input in industrial enterprises, because of increased levels of automation in the industrial plants; at the viability at the national and regional levels to adjust swiftly to technological and market changes at the international level; at the rapid widening of the already considerable knowledge gap between the market economies of the North and the countries of the Caribbean.

The countries of the Caribbean however, are increasingly characterized as lacking a capacity to manage technological change. This immediately gives a very significant role and direction for CCST. With its regional dimensions it is in an excellent position to be the standard bearer for the planning process in S&T for the region - the "change agent" in the management of technology.

From the corporate perspective, the planning process would necessarily yield strategic directions. These directions I would like to identify as follows:

### **Promotion of a new science regime**

We talk about S&T but there is not a real regime for S&T development. It is essential that all the key elements in a science regime be properly understood by all participants and that a positive approach to the regime is engendered.

Misconceptions about the science regime need to be corrected and the roles of new and already established science agencies be firmly established;

### **Establishment and management of an appropriate funding regime/system for S&T**

Funding for S&T so far has been ad hoc. A total policy needs to be put in place which will identify sources of funding and disburse such funding in priority sectors for maximum benefits. In establishing a funding regime policy, related issues such as the definition of public good research and the separation of funding for operational and output research will need to be fully resolved;

### **Restructuring/structuring of the research science and technology sectors for the region as a whole**

It is essential to ensure that the priorities of S&T are appropriately structured to contribute most effectively and efficiently;

### **Manpower development in the S&T Sector**

This is a very critical factor. We cannot do science and technology without scientists and technologists. It is a lengthy process but in the short run we will have to find creative and innovative means to fill the void now existing in this area in most of the countries of the region.

The above areas have been identified in terms of strategic imperatives in S&T development, but these various areas could basically represent new initiatives and strategic directions for the CCST. In fact if we are to develop a regionally integrated S&T system, these would form essential operating parameters for CCST, and I would like to suggest that the Plenary Meeting gives consideration to some of these initiatives.

Some other priority areas that might be considered for CCST thrusts are:

**Policy development**

Despite past efforts in this respect we have to have in place a truly comprehensive and embracing S&T Policy for the region in general. In most cases no national S&T policies are in place;

**Basis for the setting of priorities and levels of funding**

There is need to develop an analytical basis and credible methodologies and information to enable priority setting and efficient utilization of funds;

**Science Reviews in Selected Areas**

CCST might undertake and publish either national or regional review programmes in selected areas;

**International Science**

The CCST could be active in international science and technology agreements. The ways these are operated could be reviewed and reconciled with appropriate S&T structures for the region.

**Specialist advice on public issues**

The CCST could arrange for or provide specialist advice on regional science issues.

**Data Collection**

The CCST arrange for the collection of data on national and regional inputs into and outputs from research and development including fulfilling international obligations to provide data on national and regional science and technology.

**Government-to-Government Research Agreements**

The CCST could provide a linkage to maintain government-to-government research, science and technology agreements including national and regional membership of international agencies.

### **Cohesive Science and Technology Policies**

The CCST would promote cohesive and comprehensive science and technology policies which enable science to achieve its potential in contributing to government outcomes, national and regional needs.

### **Technology Supply and Demand**

CCST could be an agent for identifying the supply and demand of technology in the countries of the region.

### **Offers of Cooperation**

CCST could identify offers of cooperation in the field of technology by the existing cooperation agencies and communicate this on a continuous basis to member countries.

### **Forecasting**

CCST could promote studies and action in the field of forecasting.

### **Record Keeping**

CCST could keep up to date records of all S&T programmes and activities carried out by the countries of the region with a view to integrating and correlating these programmes and activities.

### **International Science**

The CCST could be active in international science and technology agreements. The ways these are operated could be reviewed and reconciled with appropriate S&T structures for the region.

### **Financing of Science and Technology**

I would like to say a few words about the critical area of financing S&T. The broad objective of financing science is to create wealth. The mechanism to achieve this objective involves the support of particular programmes of knowledge generation to underpin the development of specified technologies. The ensuing research is strategic research in the sense that clear technical objectives are employed to guide the investment process. The same normal investment process which guides what is known as "corporate

business development" guides investment in science. It is an investment in the future and like corporate business requires financing. It is an investment, not only by government but by the people and therefore government alone cannot be the only investor. However, in the context of the developing countries of the region, governments must take the role of facilitator and develop strategies to raise the funds needed.

Mobilization of resources for S&T involves inducing an increase in the proportion of national income saved for S&T activities. Financing S&T cannot take place in isolation from the overall general economic conditions. This has to be integrated into the strategy for S&T development and overall model of economic growth. Science and technology can no longer be considered as by product of sectoral development, but must direct and influence sectoral development.

Some of the mechanisms and options which the governments of the region should consider and which CCST should in its future operation emphasize for the mobilization of domestic and regional resources are:

#### **Direct government financing**

- National budget
- Special funds for Science and Technology
- Government contracts for Research and Development.

#### **Promotional and Regulatory Role of the State**

Apart from direct financing, the State can play and should play an indirect role in promoting and regulating the mobilization of financial resources for S&T.

This indirect role will include:

- Purchasing Power of the State
- Venture Capital
- Incentives, which include:
  - (a) subsidies;
  - (b) promotion of S&T activities;
  - (c) strengthening S&T manpower;
  - (d) promotion of the sale of national technological goods and services.
- Trade and Tariff structures
- Foreign Investment
- Relevant Institutional Roles, such as:
  - (a) National Development Banks;
  - (b) Commercial and Investment Banks;
  - (c) Pre-investment, consulting and engineering services;

- (d) National Research and Development Institutions;
- (e) Productive Sector.

Governments should also seek to mobilize external sources of funding, which although as a percentage of total resources, might not appear impressive, yet can play a vital role.

These will include:

**A Multinational Cooperation**

- (i) Regional Development Banks
- (ii) Regional inter-government organizations
- (iii) The United Nations System such as:
  - (a) World Bank;
  - (b) United Nations Development Programme;
  - (c) United Nations System for S&T for Development.

**B Bilateral Cooperation**

**C Foundations and Other Autonomous Organizations**

In all of these financing methods, CCST can play a vital role. The manner in which funds are accessed and utilized is a very important aspect and CCST can assist governments through identification and formulation of appropriate projects and strategies.

In the context of a proposed integration of the region, efficient utilization of the resources of the region is critical, if the region is to remain competitive in today's and tomorrow's world. S&T is a resource which cannot be overlooked and which must substantively be factored into any plans for regional development and integration. The CCST provides such a mechanism. There can be no talk, much less implementation of any integrated regional S&T policy, nor talk of a regional approach to tourism, to energy, to transportation, to housing, to agriculture, etc. without a mechanism which will allow the utilization of the entire S&T strength and capability of the region.

For this I call upon member states of the region to endorse once more the high ideals of the Council and to support the Council as a mainspring to the regional developmental effort.

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