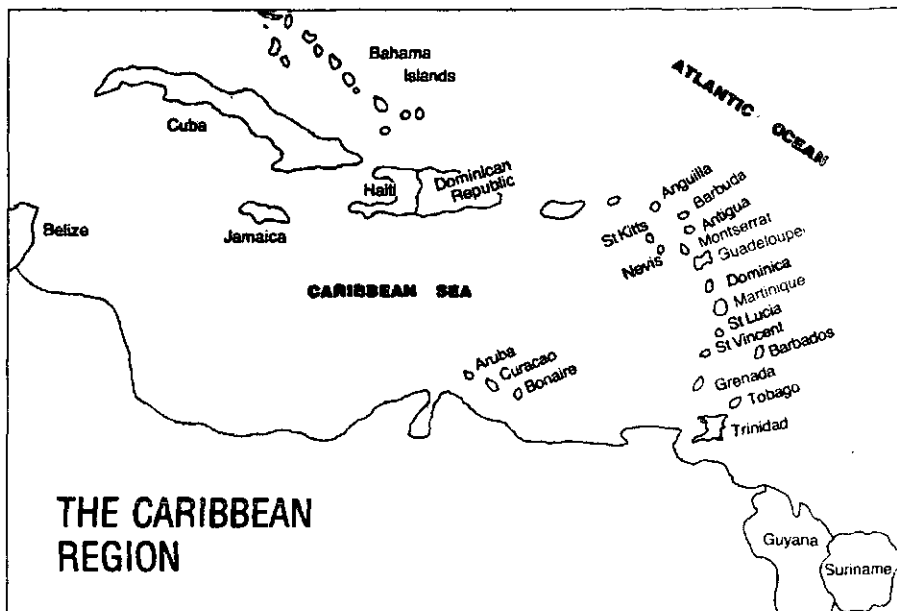


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DEVELOPMENT
AND
CO-OPERATION
COMMITTEE



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Subregional Headquarters for the Caribbean
CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE
CARIBBEAN COUNCIL FOR SCIENCE AND TECHNOLOGY



PRESENT STATE AND TRENDS
IN
SCIENCE AND TECHNOLOGY POLICIES IN THE CARIBBEAN

Prepared for CASTALAC II



UNITED NATIONS

ECONOMIC COMMISSION FOR LATIN AMERICA Office for the Caribbean

I. GENERAL FEATURES

A. Geopolitical Setting

1. At its second session in Santo Domingo, March 1977, the Caribbean Development and Co-operation Committee (CDCC), a permanent subsidiary body of the Economic Commission for Latin America (ECLA), directed that the Secretariat should move towards the establishment of a Caribbean Council for Science and Technology (CCST). Subsequently, a joint UNESCO/ECLA feasibility study was carried out for CCST and this study was one of the items discussed at a UNESCO/ECLA-sponsored Consultation on Science and Technology Policies in the Caribbean Region held in Georgetown, Guyana in December 1977. The CCST was further considered at a Caribbean Subregional Seminar on Science and Technology for Development held in Kingston, Jamaica in February 1978, and again at an expert group meeting in Port of Spain, Trinidad in December 1978. That meeting had before it the draft statutes of the CCST prepared by a UNESCO consultant. The Statutes of the CCST were eventually adopted at an intergovernmental meeting in Kingston, Jamaica on 17 April 1980, and subsequently ratified by various countries. The First Plenary Session of CCST was held in Bridgetown, Barbados from 29 June to 2 July 1981; subsequent plenary sessions have been held in Kingston, Jamaica, 3-5 November 1982, and in Curaçao, N.A., 27-29 July 1983.

2. Countries currently members of the CCST are: Belize, Cuba, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago. Under the Statutes of the CCST each member country is entitled to designate two members, one of whom must be a scientist chosen by the respective government from amongst senior officials of national bodies responsible for science and technology policies, or of national science and technology research councils, or, where such bodies do not exist, from amongst leading scientists or engineers in the government sector, the universities, appropriate professional associations or the productive sector. A country may designate only one Council member if it so wishes, in which case he must be a scientist chosen in the manner described above.

3. The Officers of the Council are: Chairman, Vice-Chairman, elected annually at the end of the year's Regular Plenary Session; Honorary Treasurer,

electd at Regular Plenary Sessions for three years and eligible for re-election; and one other member, elected annually at the end of the year's Regular Plenary Session. In electing the officers of the Council, members are guided by the principle of equitable geographic distribution. The Officers of the Council constitute the Executive Committee, which meets at least twice between Regular Plenary Sessions to review the Council's activities and to consider the draft Annual Report, the Agenda and the working documents of the next Regular Plenary Session. The ECLA Office has agreed to provide Secretariat services until the CCST is able to create its own Secretariat.

4. One of the interesting features of the CCST, but which is not without its problems at times is the diversity of the membership in regard to size, language, culture and political organization. The largest country, Cuba, is 115,000 square kilometers in size and has a population of roughly 10 million; the smallest, Saint Vincent and the Grenadines is 390 square kilometers with a population of just around 100,000. The group of countries contain one Spanish-speaking, one Dutch, one French, and eight English. Four have an elected President as Head of State (one elected for life). Six (English-speaking) have a Governor-General but with real political power residing in a Cabinet of elected persons headed by a Prime Minister; and one (Suriname) is governed by a Military Council. Nonetheless, because of the common scientific and technological problems facing the countries, these differences hardly manifest themselves in the workings of the CCST.

5. The establishment of the Caribbean Council for Science and Technology was in direct response to a perceived need by Caribbean countries for a mechanism to make the best and most effective use of the region's scientific personnel and institutions in applying science and technology to the development of the region. The specific aims of the CCST, as set out in the Statutes, are:

(i) To implement CDCC objectives by designing and executing appropriate joint scientific and technological projects, and also advise the CDCC and its member countries on scientific and technological issues requiring attention;

(ii) To identify institutions that could participate in the projects, and to establish the mechanisms for co-operation;

(iii) Where no relevant institutions exist, to propose measures for the implementation of particular projects;

(iv) To devise procedures for the effective dissemination of Caribbean R and D projects and their application in member countries;

(v) Generally, to promote the establishment and strengthening of appropriate national and Caribbean organs and mechanisms for science and technology development and application.

The major function of the CCST is to enhance regional co-operation and mutual assistance in science and technology and to strengthen the thrust for self-reliance, whilst simultaneously observing the national independence and sovereignty of its member countries. The CCST must perform in a situation where most of its member countries are still technically underdeveloped and lack national policies for science and technology; and, the application of science and technology to national development is not commonplace.

B. Development Scene

6. As an organization still very much in embryo, the CCST is concerned with promoting co-operation in the field of science and technology aimed at furthering the social and economic development of its member countries, and with the involvement of other regional organizations, such as the Caribbean Community Secretariat (CARICOM). Meetings of the CDCC provide guidelines and identification of issues of concern, as also do the various meetings of Heads of Governments of the CARICOM countries and of the Standing Conferences of Ministers. Thus, the CCST itself has been able to identify priority, scientific and technological activities suitable for regional co-operation, and has initiated and implemented a number of projects towards the enhancement of national capabilities in science and technology as agreed by its member countries. These projects are representative of the programme priorities and achievements of the CCST. Also, the Council has used the

device of setting up Specialist Committees/Working Groups, comprising national representatives, who have to seek solutions to pressing problems in selected areas, such as energy; transfer of technology and patents; information systems; agricultural research; marine affairs (including fisheries); health, nutrition and pharmaceuticals, universities, industrial sector and other private and public sector institutions; and newly emerging technologies.

7. Regional mechanisms for co-operative action in science and technology are either weak or non-existent in the Caribbean subregion - the CARICOM Ministers Responsible for Science and Technology met for the first time on 6-8 April 1983. Therefore the CCST must at least identify the priority problems and articulate the strategies for dealing with them. The Council recognizes that effective collaboration and co-ordination can be based only on information about current scientific and technological activities in the region; therefore, it has elaborated projects specifically towards this end, despite its small budget and the lack of a permanent Secretariat of its own. By its nature the Council is well placed to provide objective assessment of problems, and to offer impartial advice on the means of solutions. Although members of the Council are appointed by governments, they act in their personal capacities and are able, in theory, to view issues outside of the influence of political considerations.

II. SCIENCE AND TECHNOLOGY POLICY FRAMEWORK

A. Development Policy Framework

8. Among the countries comprising the CCST there is no regional development policy as such, although the CDCC as an umbrella body has identified areas for close co-operation. These include energy, agriculture, industrial development, marine resources, tourism and environmental protection. Through the mechanism of CARICOM, the English-speaking Caribbean countries have been attempting to arrive at regional policies in key sectors. A regional Food and Nutrition Strategy has recently been established, and regional policies are being discussed for energy and industry.

9. Individually all countries of the region have placed as a high priority the satisfaction of basic needs of the mass of the population - food, health, shelter and education. The accelerated development of agriculture is being pursued vigorously to combat the very high and increasing food import bill. Within the English-speaking Caribbean alone food imports now exceed US\$1.5 billion. With the exception of Trinidad and Tobago which has substantial reserves of fossil fuel, all countries are experiencing balance-of-payments problems as a result of their high energy bill, and urgent priority has been given to the search for alternative sources of energy and the more efficient use of conventional sources of energy.

10. For many countries, tourism continues to play an important role in the economy, and tourism development continues to be high on the agenda of development priorities. This has inevitably led to considerations of the environment and measures for its protection. Among environmental concerns, coastal management is perhaps the one on which most attention is focused.

11. Of major concern both at the national and the regional level is the inadequacy, for the most part, of the skilled human resources needed to accelerate the pace of development. Development of human resources is high on the list of priorities in all countries. Countries are also placing emphasis on improving their weak information base, either individually or through co-operative efforts at the regional level. Thus, information systems were identified as one of the priority areas, (together with agro-industry), for urgent attention at the first Meeting^{*/} of CARICOM Ministers Responsible for Science and Technology held in Jamaica, 6-8 April 1983.

B. Development Policy and Science and Technology Policy

12. The CCST was set up to promote co-operation in the field of science and technology aimed at furthering the social and economic development of its member countries, including the implementation of provisions of the Constit-

^{*/} Although this Meeting was convened by CARICOM, Suriname, the Netherlands Antilles, Bahamas and the British Virgin Islands attended as observers.

gent Declaration of the Caribbean Development and Co-operation Committee (CDCC) to promote efforts to co-operate in the mutual transfer of science and technology in order to facilitate the adaptation of imported technology and the development of domestic technologies and increase the bargaining power of the Caribbean countries in their relations with countries outside the area. Because of the common problems and perceptions of these countries, it is possible to identify areas that are significant to development in the Caribbean subregion. This is the strategy which the CCST has adopted in defining its own programme priorities. The convening by the ECLA/CCST Secretariat of a workshop on Agricultural Research Policy and Management in the Caribbean, 26-30 September 1983 was a response to the need for rationalization in this field. The CCST has implemented a project dealing with the development of agro-industries and employment opportunities at the rural level and one on the conservation and exchange of germplasm of crop plants. Recognizing the great significance of new technologies for Third World development, the Council with the assistance of UNESCO, UNCSTD, UNIDO and other agencies is actively preparing for a regional workshop on the potential and limitations of newly emerging technologies for Caribbean development.

13. Although no formal mechanism exists for linking regional development "policy" with science and technology policy, CCST's activities are being made consonant with certain ("national") development objectives through three informal mechanisms:

- (i) The composition of the Council, which allows for representation at official as well as scientific level;
- (ii) Feedback from the annual meetings of the CDCC to which the CCST reports annually;
- (iii) Close interaction with other regional organizations such as CARICOM and the Caribbean Development Bank (CDB).

III. SCIENTIFIC AND TECHNOLOGICAL POTENTIAL

A. Human Resources

14. Under the Statutes, the Work Programme of the Caribbean Council for Science and Technology may include, among other things:

(a) Action to raise the level of public awareness of the implications of science and technology for social and economic development;

(b) Action to foster the education and training of specialized scientific and technological R and D personnel;

(c) Promotion of measures for enhancing the status of scientific researchers, teaching personnel and other scientific and technological workers;

(d) Measures to encourage talented and qualified staff to work and remain in the region;

(e) Organization of symposia, seminars, workshops and conferences.

Thus, CCST's approach to human resources development in science and technology has been defined by Statutes in such a way as to prevent the duplication of work of other institutions. The Council's project on the preparation and exchange of audio-visual material for education in science and technology has great value in its efforts to develop the human resources in science and technology in the Caribbean subregion.

B. Financial Resources of CCST

15. According to the Statutes of the CCST the finances of the Council shall consist of:

(i) Contributions from Member Governments, with additional support from organizations within the United Nations System and other institutions;

(ii) Funds for projects sponsored or launched by the Council, and which qualify for assistance within the framework of activities of organizations of the United Nations System, or any other appropriate international, regional or national organization.

Additionally, the Council may establish a Special Fund for Scientific and Technological Development in the Caribbean, to be used particularly to assist priority R and D projects of an intraregional nature, within the guidelines set down by the Council.

16. Because of the shortage of funds in the new CCST, the CDCC Secretariat was requested to provide an interim Secretariat for the CCST. CCST has been fortunate therefore to date in having the services of the ECLA Office and in particular of a senior professional officer in science and technology as its Interim Secretariat. As a result, whatever income has been received has been used solely for the holding of meetings of the Council, and for the support of projects. In 1981/82 expenditure was US\$58,000. Arrears due from governments at the end of 1982 amounted to US\$64,000, all of which could have been used on projects had the money been received. In 1983 projected expenditure was set at US\$616,000 of which only US\$242,000 could be said to have represented assured funds.

17. It seems unlikely that governments' contributions to CCST will exceed the current US\$52,000 annually in the near future. However, the Council expects to receive funds from international funding agencies to match the excellence of its projects and programmes for regional collaboration. A small amount of extrabudgetary support (£2,000) was obtained for the consultancy on the germplasm conservation project, and a larger amount (US\$39,000) for the September 1983 regional workshop on agricultural research policy and management. The process of setting up a Special Fund under the Statutes of the Council has been initiated.

C. Information Resources

18. ECLA provides support information services to the CCST Secretariat. ECLA is in the process of establishing a Caribbean Information System. Considerable progress has been made with the CARISPLAN project within the CEPAL/Caribbean Documentation Centre. (The CARISPLAN project is a joint CEPAL/IDRC project which concentrates on provision of advisory services and training in order to promote the development of national information centres, and the co-ordination of these and similar centres to provide

greater access to developmental planning literature in Caribbean countries). The abstracting bulletin - CARISPLAN Abstracts, aims to ensure a sharing of up-to-date information among Caribbean policymakers, planners of socio-economic development projects and programmes, researchers and teachers of development planning, and library and information specialists. The CCST is collaborating with the UN World Intellectual Property Organization (WIPO) in work relating to the establishment of a subregional patent information and document system with the CEPAL Caribbean Documentation Centre.

D. Surveying of Scientific and Technological Capabilities

19. One of the first projects on which the CCST embarked after its establishment was the assessment of national scientific and technological capabilities. The objective of the project was to obtain information on the quality and quantity of personnel involved in science and technology activities at the national level, and their deployment within the national framework for development. The project began in 1981 at a workshop held in Suriname when the methodology for data collection and analysis was agreed upon. The survey is about 60 percent complete.

IV. POLICY ISSUES IN SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT

A. Major Developments

It has become increasingly apparent over the years that regional co-operation in science and technology is an essential factor for national development in the Caribbean, and even moreso for the smaller territories. The survey of scientific and technological capabilities being undertaken by the CCST is a prerequisite to meaningful co-operation, providing as it will the information on which to assess the areas where co-operative efforts are feasible from the standpoint of available resources.

21. Science and technology has been designated a priority area since the formation of the Caribbean Development and Co-operation Committee (CDCC); and, the CCST is the second mechanism for active co-operation of a day-to-day

operational nature that had emerged within the framework of the CDCC. The first was the Caribbean Documentation Centre which had the task of laying the framework for the Caribbean Information System for economic, social and technical information. The co-operation devices for both the information system and the CCST are based on the principle that by bringing the national counterparts into a working relationship which constitutes a network, it enables the national unit in any one country to supplement the similar units in the other countries, thus improving the capabilities of each to better serve the national need. Within the network, the CCST serves as the focal point for the national science bodies.

22. Regional co-operation in science and technology was also the theme of the first meeting of CARICOM Ministers Responsible for Science and Technology, held in Jamaica in 1983, where the priority areas for regional co-operation were identified as information and information systems and the transfer of technology; and agro-industry. The CCST participated in that meeting, where its role vis-à-vis the other major CARICOM organizations, the CDB and CARICOM itself was discussed.

23. The CARICOM Ministers established an Interim Co-ordinating Committee (ICC), on which the CCST is represented, to:

(i) Identify priority areas (within information and agro-industry) to be addressed in the short-, medium-, and long-term;

(ii) Elaborate projects for implementation, including costing as well as mechanisms and strategy for implementation;

(iii) Identify possible sources of financing; and

(iv) Monitor and evaluate the mechanisms identified for projects for implementation.

24. It is anticipated that the action programme recommended by ICC will be approved by a Ministerial Sub-committee, also set up at the Ministerial meeting, within the next few months.

25. In September 1983 the CCST, jointly with ECLA Subregional Headquarters for the Caribbean, organized a Workshop on "Agricultural Research Policy and Management in the Caribbean", in which the participants were Permanent Secretaries and Directors of Agricultural Research. The Workshop agreed on the goals for national and regional agricultural research and development, and recommended measures for the attainment of these goals. The importance of regional co-operation, was re-emphasized, and the Workshop recommended that the establishment of networks for collaboration in research between countries and across the region should be encouraged.

26. In May 1983 the CCST participated in a small working group which was convened by UNESCO to plan a subregional meeting on the implications of new technologies for Caribbean Development. The working group strongly emphasized the importance of such a meeting for the Caribbean at this time, out of which it felt should emerge:

(a) A directory of case studies demonstrating the current practical applicability of new technologies within the Caribbean context;

(b) A system for constant monitoring and dissemination of data on new technological developments. The system would evaluate the implications of the new technologies and their application to the Caribbean.

B. Achievements

27. Given the diverse characteristics of the countries comprising the CCST, its establishment alone must be considered a major achievement. The CDCC Secretariat at the ECLA Subregional Headquarters for the Caribbean has concentrated on servicing the CCST, and its programme of work in this field has been implemented in co-operation and collaboration with many national, subregional and international agencies and organizations. The achievements include:-

(a) Convening and servicing four meetings of the Executive Committee, of three Plenary Sessions of the CCST, and of two inter-agency/CCST Meetings; and

(b) Initiating work on the following eight projects in the CCST work programme:

- (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 on food supplies in the region;
- (v) Conservation and exchange of germplasm of crop plants;
- (vi) Development of agro-industries and employment opportunities particularly at the rural level;
- (vii) The potential and limitations of newly emerging technologies for developing countries;
- (viii) A science and technology policy for the Caribbean region.

28. Work has proceeded farthest on two of these projects namely - The Assessment of National Science and Technology Capabilities; and the Preparation and Exchange of Audio-visual Material for Education in Science and Technology. For the former project to date one subregional workshop has been held, questionnaires have been prepared and a manual has been designed for the English-speaking Caribbean. Already some countries have carried out their national assessments, and the ECLA Secretariat has been assisting the smaller countries with their assessments. These actions should lead towards a co-ordinated policy formulation to strengthen national capabilities in science and technology. Under the latter named project, two films have been prepared on videotape on important aspects of science and technology in the Caribbean, and, the showing of these films has evoked favourable responses. This audio-visual material is valuable for human resource develop-

ment in improving public awareness of the importance of science and technology for social and economic development, and in training persons in the high priority areas in agro-industry and in the information systems in the subregion.

29. With respect to the other projects, articles have been collected for the science and technology journal. Separate consultancies were responsible for the study of the consequences of developing energy crops on food supplies in the Caribbean, and for the study of agro-industry particularly at the rural level. The reports of the consultants have been used to elaborate project proposals which have been submitted to Agencies with requests for funding. A regional survey of available facilities for the conservation of a germplasm of crop plants in the Caribbean also has been started. Seminar/Workshops have been held following initiatives by the CCST on the impacts of the new advanced technologies on Caribbean societies.

C. Problems

30. The CCST was established in 1980. But ever since that time its work has been affected by the shortage of funds and staffing; and a major challenge facing the Secretariat has been to devise mechanisms for discharging its mandate. The CCST has a very special task to achieve co-operation and mutual assistance which bridges the language and cultural differences that constitute the Caribbean. The work programme of the CCST is required to be compatible with the activities in science and technology pursued by the CARICOM and also by the non-CARICOM member countries; and, the CCST work programme must involve the non-governmental organizations such as the professional associations of the Caribbean.

V. INTERNATIONAL SCIENTIFIC AND TECHNOLOGICAL CO-OPERATION

31. At the request of the CCST a meeting of agencies, multilateral and bilateral, involved in supporting scientific and technological programmes and projects in the Caribbean, was convened in Kingston, Jamaica, just prior to the Second Plenary Session of the CCST, 3-5 November 1982. The meeting was

called to examine how the various forms of assistance to science and technology in the Caribbean could be rationalized, and at the same time to acquaint the agencies of the work of the CCST and of the direction in which the region foresaw the development of science and technology. A second inter-agency meeting was held just prior to the Third Plenary Session of the CCST (27-29 July 1983). As a result of the discussions many of the agencies represented at the meeting became convinced that much more could be done by the agencies themselves in co-ordinating their activities and that the process might be facilitated by the CCST. One particular area for example would be in the formulation of a regional policy in science and technology in order that projects are directed towards overall national as well as regional development goals. The inter-agency meeting is a new dimension in international scientific and technological co-operation in the Caribbean, and is an attempt to ensure for the region the optimum use of financial and other resources.

32. Apart from this general link with the agencies, the CCST maintains a close working link with UNESCO, and the other major regional organizations, CARICOM and the CDB. The CCST has also established bilateral relationships with the International Development Research Centre of Sweden, the United Nations Financing System for Science and Technology for Development, the Swedish Agency for Research Co-operation (SAREC), the Commonwealth Science Council and the Organization of American States. It is CCST's policy to work closely with all international organizations in furthering the development of science and technology in the region.

