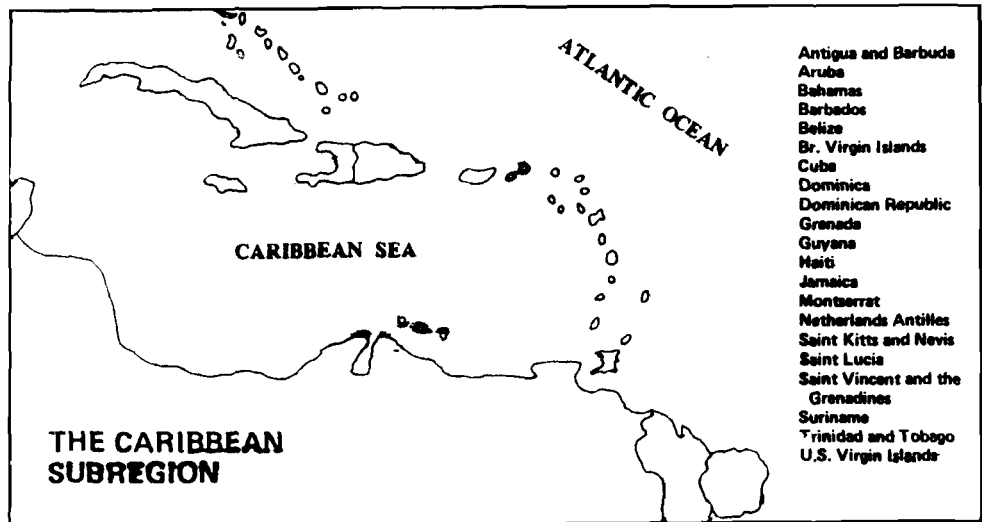


**C**ARIBBEAN  
**D**EVELOPMENT  
AND  
**C**O-OPERATION  
**C**OMMITTEE



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CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE

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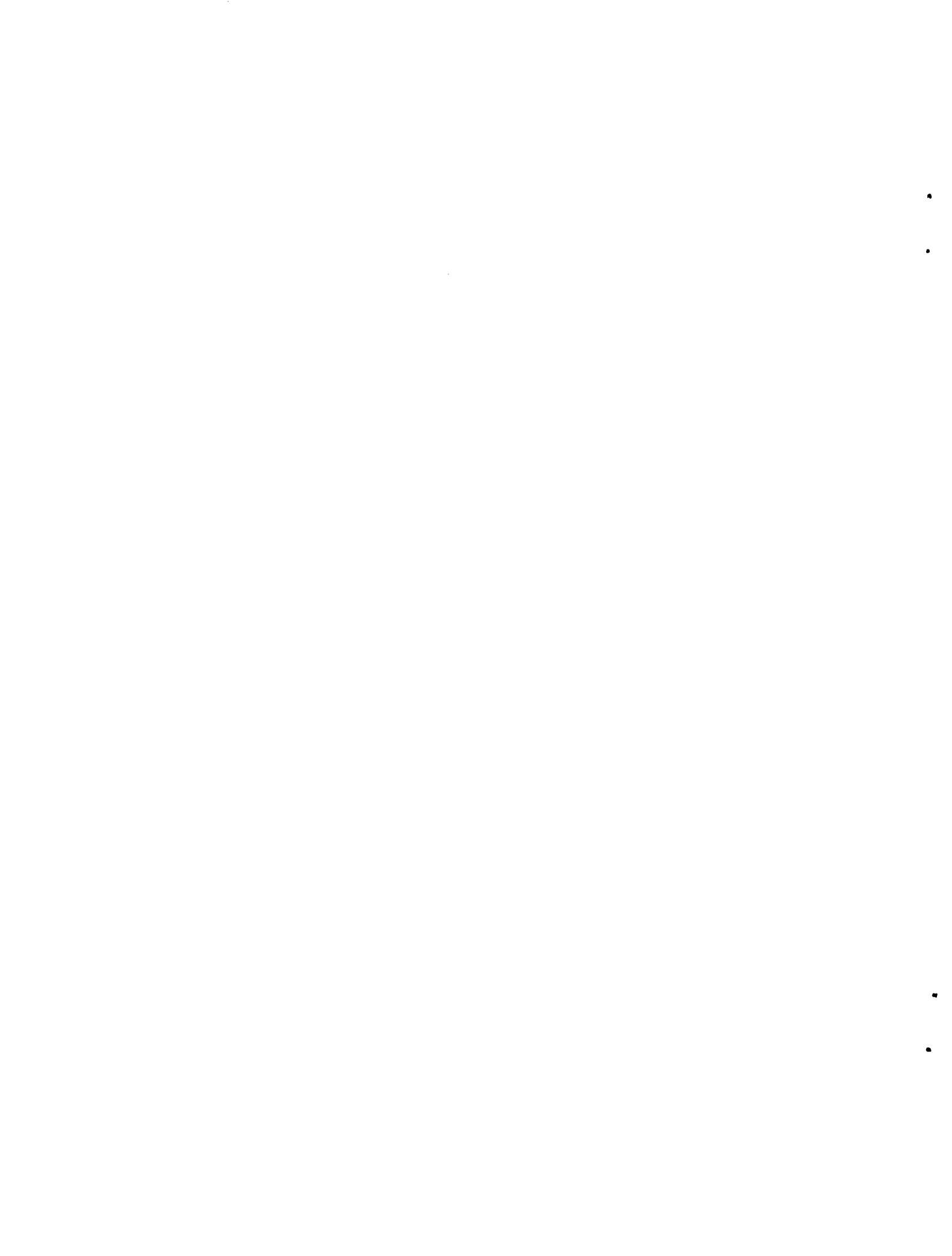


REPORT TO THE  
CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE (CDCC)  
ON ACTIVITIES OF THE  
CARIBBEAN COUNCIL FOR SCIENCE AND TECHNOLOGY (CCST)  
FOR THE PERIOD 1984-1990



**UNITED NATIONS**

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**Introduction**

The Caribbean Development and Co-operation Committee (CDCC), an advisory body to the Economic Commission for Latin America and the Caribbean (ECLAC), decided at its second session in the Dominican Republic during March 1977, that a Caribbean Council for Science and Technology (CCST) should be established 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 Constituent Declaration of the 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".

The objectives of the Council as stated in the statutes (Article 3) are:

"The Council shall pursue the following specific aims:

- 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 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 the results of Caribbean R&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".

Currently, there are 13 member countries of the CCST: Antigua and Barbuda, Belize, Cuba, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago.



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In 1987, the statutes were amended to permit the admission of non-independent Caribbean territories.

### Work programme

The Council became operational in 1981 and held its first plenary session in Barbados. During the year, eight projects were identified and approved as the basis for the CCST work programme.

These eight projects were:

- 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. Development of agro-industries and employment opportunities, particularly at the rural level
- vi. Conservation and exchange of germplasm of crop plants
- vii. The potential and limitations of newly-emerging technologies for developing countries
- viii. A science and technology policy for the Caribbean

### Projects

#### Assessment of national science and technology capabilities

This was designated a priority project with the objective of obtaining 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.

Although some difficulties were experienced in the implementation of this project, some useful information was obtained and the United Nations Educational, Scientific and Cultural Organization (UNESCO) has now built upon the idea into a much larger project.

Establishment of a science and technology journal for the Caribbean

The objective was to bring CCST activities to the attention of scientists, technologists, policy-makers and planners in the region and to share knowledge of new and significant information in the areas of:

- (a) Technical processes appropriate to the countries of the region;
- (b) Projects in progress; and
- (c) Research results relevant to the development of the science and technology capability of the region.

The Council decided subsequently to produce a newsletter instead because of the high production cost. The first issue of the CCST newsletter was published in late 1985 and it continues to be published bi-monthly, dealing with topics of interest, and publishing information obtained from member States.

Preparation and exchange of audio-visual materials for education in science and technology

The objective of this project was to sensitize students, teachers, decision-makers and the general public about the pivotal role of science and technology in present-day society.

Three 20-minute video films were produced:

- (a) "Science and technology: The Trinidad and Tobago Experience" (1983);
- (b) "Regional developments in energy" (1983); and
- (c) "Food technology: Our business now" (1985)

These were distributed to CDCC and CCST countries free of charge in the video format preferred by each country, and have been shown on national television and in secondary schools, presenting opportunities for discussion and research among students.

The project demonstrated the co-operation that can exist within the Caribbean. Filming for these productions took place in Barbados, Grenada, Guyana, Jamaica and Trinidad and Tobago. Support was extended not only by all representative governments, but by regional institutions, scientists, technologists and the business community, and included the Caribbean Development Bank (CDB), Jamaica National Investment Promotion Limited (JNIP), Institute of Applied Science and Technology of Guyana (IAST) and Hi-Lo Food Stores of Trinidad and Tobago, among others. The films

were produced on a low budget and served to bring together regional educators and television production facilities to improve their production skills.

A study of the consequences of the development of energy crops on food supplies in the region

This project was proposed at a time when some CARICOM countries were assessing the feasibility of converting part of their sugar-cane and cassava production into fuel. The objective was to collect and analyze information which would assist regional planners and decision-makers in the critical evaluation of the production of crops for food or for fuel and in identifying options.

In 1983, a report by two consultants contracted by the secretariat, "Consequences of the development of energy crops on food supply in the Caribbean" (CDCC/CCST/83/10), presented a precise plan of action together with provisional estimates.

The report was submitted to funding agencies for financial support. By this time, however, the lowered cost of petroleum fuel had led to a waning of interest in projects of this kind.

Development of agro-industries and employment opportunities particularly at the rural level

This project had two objectives:

(a) To reduce post-harvest losses by optimizing the small-scale processing of agricultural produce, particularly in rural areas; and

(b) To increase individual income by the sale of processed and semi-processed products.

A consultant was contracted to assess the available skills and natural resources in food processing in Grenada and Dominica. His report was submitted to the Council and subsequently to funding agencies, while the project was transferred to the Agriculture Unit at the ECLAC Subregional Headquarters for the Caribbean. Arising out of this was a survey and consultant's evaluation of cottage-type agro-processing industries in the Less Developed Countries (LDCs) of the Caribbean. This was part of a project funded by the Government of the Netherlands to identify and evaluate the potential for development of rural agro-based industries in the LDCs. A meeting was held in March 1985 in Antigua and Barbuda to consider the consultant's evaluation.

CCST resumed activity in this area in 1985. In conjunction with the Caribbean Association of Industry and Commerce (CAIC), it held two workshops for small-scale agro-processors for the

Organization of Eastern Caribbean States (OECS) with particular emphasis on quality control, marketing and preliminary aspects of business management techniques. One workshop was held in Saint Christopher and Nevis and the other in Saint Lucia.

Conservation and exchange of germplasm of crop plants

This project's objectives were to assist regional centres with the identification, exchange, conservation and storage of genetic material for indigenous as well as introduced crop species.

In 1983, funds were obtained from the Commonwealth Foundation and a consultant was recruited to initiate work on this project. His report, "Interim report on conservation and exchange of germplasm of crop plants", is contained in document CDCC/CCST/84/4. Arising out of its recommendations, a plant-breeder recruited to complete the first stage of the project commenced work in September 1984.

Following a visit to Jamaica, Grenada and Guyana, the consultant reported on the status of germplasm diversity and conservation in these three countries. His findings and observations are contained in a report entitled "Report on conservation and exchange of germplasm". This report was circulated to member countries for their consideration.

CCST itself did not pursue any further action since other organizations had by this time taken action in this area.

A science and technology policy and plan for the region

In 1982, the Council included this project in its work programme in order to formulate a cohesive regional policy on science and technology to harmonize the priorities and capabilities of individual member countries.

At the request of the CARICOM Ministerial Subcommittee on Science and Technology, the interim secretariat co-ordinated the preparation of a science and technology policy and plan for the region.

The plan has since been presented to the CARICOM Ministers responsible for Science and Technology for their consideration and adoption.

The potential and limitations of newly-emerging technologies for developing countries

CCST was one of the first regional organizations to initiate action in this area when it identified this project in 1982. Its objectives were:

(a) To create an awareness of the implications of newly-emerging technologies among senior officials and decision-makers in regional governments and institutions; and

(b) To identify and implement the type of practical action which would be most effective for the beneficial utilization of these technologies.

With the assistance of UNESCO, a preparatory meeting was convened in Jamaica in May 1983 to plan a workshop on new technologies and their implications for Caribbean development. A regional report on the Implications of New Technologies for Caribbean Development was completed and distributed to Council members for discussion and comment. It was originally intended that CCST, in conjunction with UNESCO and the United Nations Centre for Science and Technology for Development (UNCSTD), would organize a workshop in 1985.

During this period, the Standing Committee of Ministers responsible for Science and Technology requested CARICOM to undertake consultations with appropriate agencies and organizations with a view to holding a regional seminar/workshop on new technologies and their implications for Caribbean development. This subsequently resulted in the convening of a seminar/workshop in Trinidad and Tobago through its National Institute of Higher Education, Research, Science and Technology (NIHERST). Financial assistance was provided by the Commonwealth Secretariat.

#### Other activities

The following activities were all initiated after 1984:

##### CCST Newsletter

The first issue of the CCST newsletter was published in September 1985. Since then, it has appeared bi-monthly, distributed using ECLAC's facilities and resources. The newsletter serves the same purpose as the journal, but is a more informal publication.

In general, each issue focuses on a particular topic, in addition to informing on past and future events and available publications. Among topics highlighted in the past were the pharmaceutical sector in the Caribbean; science and technology and the small State; science and technology popularization and sustainable development and technology.



### Other CCST science and technology popularization activities

During the period when the CCST films were made, a capability in film production was developed whereby local media and education personnel worked together in the production of material for science education purposes. This led to two training workshops on television production materials for education and popularization of science and technology. These were held in Saint Lucia in 1986 for the Windward Islands and in Antigua and Barbuda also in 1986 for the Leeward Islands. The countries participating in the workshops were Antigua and Barbuda, Dominica, British Virgin Islands, Grenada, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Netherlands Antilles and Montserrat. This enabled the local production of science and technology films for use in schools and on national television. In Saint Lucia, for example, the Primary Health Care Unit benefitted greatly and continues to produce public information material which is regularly aired. CCST's role in upgrading the skills of personnel in Saint Lucia's Helen Television pre-dates that station's participation in CBU's programme "Caribvision" and undoubtedly contributed to it.

A register of films dealing with science and technology in the region was also started, using material from companies in Trinidad and Tobago, with the aim of circulating these films throughout the region.

CCST developed the main ideas behind the Workshop on Science Writing and Communications, which was eventually held in 1986 in conjunction with the Committee on Science and Technology for Education in Developing Countries (COSTED) and the Caribbean Industrial Research Institute (CARIRI) of Trinidad and Tobago.

Through its activities in this area, CCST also supported the first regional consultation on science education research in Latin America and the Caribbean, held in Trinidad from 12 to 15 February 1986, under the auspices of the Faculty of Education, University of the West Indies (UWI).

### National consultations on science and technology

In 1985, the plenary session agreed that the CCST should, as a principal function, assist in strengthening and/or establishing national science councils in member countries. To that effect, a sub-committee was appointed to develop a paper on guidelines for establishing national science councils. The paper produced was distributed to member countries and at the next plenary session the Council mandated the interim secretariat to assist in conducting national consultations on science and technology.

The series of national consultations was planned to examine the role of science and technology in the development of the smaller CCST member countries and to make recommendations for the organization, policy and programmes for science and technology at the national level.

CCST helped to identify and provided financial support for resource persons drawn from regional and national institutions. Participants in these consultations represented both public and private sectors of each country. The sessions were generally held in plenary with lectures by the invited persons, followed by open discussions.

Thus far, consultations have been held in Saint Lucia (September 1987), Grenada (November 1987), Antigua and Barbuda (April 1987), Dominica (October 1988) and Saint Vincent and the Grenadines (November 1989). Consultations in Saint Christopher and Nevis will be held shortly while preliminary discussions are being held with the Government of Belize on that country's consultation.

#### Topic for in-depth discussion

In 1985, the plenary session decided that future plenary sessions would hold in-depth discussions on at least one critical issue. The first, discussed in 1986, was "Utilization of natural resources for development in the region, with special reference to: (a) natural products (including agricultural products) and (b) minerals".

Two topics, "Biotechnology" and "Environment", were discussed in 1987. During the discussion, information was exchanged on developments occurring in the various countries in these areas. Of particular concern were offers made to Caribbean countries to dispose of waste from developed countries and the possible environmental effects if these were accepted.

In 1988 the topic "Science Fairs" was discussed with a view as to how these could be used to improve the development of indigenous technology.

#### Animal feed production

A project shared by the University of the Virgin Islands (UVI) and Saint Lucia was developed to investigate the use of tilapia as a protein source using coconut meal and banana as a feed for pigs and possibly other animals. Following successful trials, the project is being expanded by the Government of Saint Lucia.

### Specialized committees/working groups

In addition to projects, the Council established eight specialized committees/working groups in the following areas: energy, transfer of technology and patents; information systems; agricultural research; marine affairs (including fisheries); health, nutrition and pharmaceuticals; universities, industrial, private and public sector institutions; and newly-emerging technologies.

Nominations to these working groups/committees were submitted by some countries.

A proposal for a Workshop on Agricultural Research Policy and Management had been formulated and the workshop was subsequently held in September 1982. This was initiated by CCST and carried out by the Agriculture Unit of ECLAC which, thereafter, assumed responsibility for the output from the workshop, which included a proposal for a Caribbean Co-operative Agricultural Network.

The first meeting of the Working Group on Health, Nutrition and Pharmaceuticals was held in March 1986 in Havana, Cuba, as was a regional Workshop on the Pharmaceutical Sector of the Caribbean. This workshop brought together senior pharmacists in the public sector and representatives of regional organizations. Among topics presented were an overview of the Caribbean pharmaceutical sector; the industrial property system regarding pharmaceuticals; ways of strengthening national and regional production and trade in pharmaceuticals; and the exploration and utilization of medicinal plants.

### CCST collaborative work with other organizations

#### CASTALAC II

On behalf of UNESCO, CCST convened a consultation of regional officials involved in science and technology matters in preparation for the Second Conference of Ministers for Science and Technology in Latin America and the Caribbean (CASTALAC II). This was held in Trinidad and Tobago in November 1984.

#### Workshop on problems of science popularization

A regional seminar/workshop on the problems of science popularization was organized in Trinidad and Tobago in October 1985 by the CARIRI and sponsored by COSTED, UNESCO and CCST which also participated in the workshop.

### TCDC function

Within its work programme, CCST has advocated and continues to employ the modality of Technical Co-operation among Developing Countries (TCDC). In all its workshops and training programmes, it has drawn on resources available within its larger members and, in cases where these were not available, within the larger ECLAC framework, as evidenced by a training seminar on agro-processing sponsored by the Government of Brazil.

The Council also provides technical assistance whenever possible. This began in 1985 when, through ECLAC, it made available the services of an engineer from UWI, St. Augustine, for one week to assist the food technologist of Montserrat in the installation of some agro-industrial equipment.

In 1988, the secretariat negotiated a two-week training workshop on banana by-products for four participants from the Windward Islands with the Brazilian Institute of Food Technology (ITAL).

Negotiations with UVI enabled two participants from Saint Christopher and Nevis and Dominica to attend a Workshop on Science Teaching at the Primary School Level. The workshop was organized by the Lawrence Livemore Institute of California and the UVI.

Funding by CCST enabled the participation of member countries in a Seminar on Biotechnology, held in February 1988 in Trinidad and Tobago.

Additionally, 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 research and development in the Caribbean drawing on the experience of the Scientific Research Council (SRC) in Jamaica, CARIRI and IAST.

In implementing the CCST work programme, TCDC modalities will continue to be employed as they serve not only as a means of information exchange, but also considerably reduce the cost of project implementation.

### Conclusion

From the wide-ranging activities and its catalytic thrusts and efforts, it can be readily seen that the CCST has significantly contributed to the advancement of science and technology in the region. In addition to being engaged in implementing activities, the Council has played a facilitating and catalytic role in

critical science and technology areas. Although severely limited by scarce financial resources, the Council has nevertheless galvanized science and technology activities which have had numerous beneficial spin-off effects on most territories in the region. Indeed, it is fair to say that potentially the Council represents, because of its wide membership, the scientific strength of the region.

In further pursuance of its developmental objectives for the region, the CCST will be promoting the establishment of a network of science and technology centres of excellence in the region, and for this some funds have already been identified.

Such a network will facilitate:

(a) Research collaboration by:

- i. Fostering collaborative research among members;
- ii. Sharing of certain specialized scientific equipment and services;
- iii. Developing competence in, and sharing knowledge on the maintenance of scientific equipment, instruments and other special services; and
- iv. Implementing research and development programmes in selected priority areas.

(b) Scientific information exchanged by:

- i. Provision of detailed information by developing institutional profiles on the centres of excellence. Such a data base is necessary for strengthening the linkages among member States of the region;
- ii. Exchange of science and technology information through newsletters, symposia and publications among member institutions.

(c) Human resource development by:

- i. Fostering scientific exchange through visiting scientists and postdoctoral research fellowship schemes;
- ii. Facilitating joint supervision of post-graduate students and the establishment of specialized short-duration methodology workshops or courses;
- iii. Encouraging short-term attachment of technical staff to gain the necessary experience which may not be available in their institutions;

- iv. Sponsorship travel for attending scientific conferences, workshops and symposia abroad to enable scientists from the developing world to interact and exchange information with the developed world.

In this context, the CCST would undertake activities in science and technology popularization nationally and regionally and in the utilization of TCDC. In the short term the Council will be involved in the identification of processed information in science and technology activities and developments outside the region which impact significantly on the region and for which regional actions and positions are required.

Two new projects should be mentioned. These are:

(a) A science and technology extension service. This is intended to be an effective community development tool. The long-term objective is to facilitate small business development programmes in the OECS in keeping with the objectives of the OECS Governments' Country Action Plans (CAPs). The immediate objective or implementation strategy is to establish industrial extension services within the six OECS countries in collaboration with the Industrial Development Corporations (IDCs) and the Produce Chemist Laboratories (PCLs) of these countries.

(b) The history of science and technology in the Caribbean. The output of this project will be a document which highlights the achievements in science and technology of all member countries and Cuba has already provided a methodology for the project's development. Through this project, 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 will continue to collaborate with a number of agencies in the region, such as CARICOM, UWI, the newly-formed Caribbean Academy of Sciences, UNESCO and the Food and Agriculture Organization (FAO), among others.

The Executive of the Council has suggested a number of initiatives which are being presented to the member countries of the CDCC at its upcoming thirteenth session.

At all its meetings, representatives have stated that because of the Council's wide membership, it remains the institution most suitable for science and technology development in the Caribbean. The potential of the Council is tremendous - in some cases it has transformed such potential into reality both by its dealings with issues/areas and by bringing these issues to the attention of organizations with competence to deal with them.

Over the years, the Council has been unable to fully realize its mandate and potential because of some continuous functional and operational problems which need urgent correction.

Firstly, is the matter of staff for the secretariat. The Council has been operating with a part-time secretariat and the last full-time Science and Technology Officer at ECLAC left in 1984. The affairs of the Council have been handled by a staff member, whose substantive post is that of Secretary of CDCC. It is in that context that the work of the secretariat must be examined - and considering these adverse conditions, the achievements so far are noteworthy and commendable.

The Council then, in effect, has had no Executive Secretary to direct the day-to-day operations of the secretariat, and to plan for the long-term development of the Council, particularly its financing, as required by the statutes. ECLAC had agreed to provide temporary secretariat services for the Council until such time as it would establish its own permanent secretariat. Unfortunately, no time-frame was given for that move and the situation has remained so for nearly 10 years. It is time that this permanently temporary condition be changed and regularized, through the establishment of a permanent secretariat in one of the Council's member countries.

Secondly, the success of the Council was predicated and depends very largely on national science and technology organizational infrastructure. In some countries this has not materialized and as a result overall performance on a regional level has been reduced. Though the Council has undertaken in its own programmes to assist the various territories in establishing these focal points, the necessary political will and support appear to be absent. This requires urgent remedy. Governments of the region need to clearly identify, maintain, support and recognize nationally these focal points. The strength and collaborative activities of the Council critically depend on this.

Efficient utilization of the resources of the region is critical if the region is to remain competitive. Science and technology is a resource which cannot be overlooked and which must substantively be factored into any plans for regional development. There can be no implementation of any integrated regional science and technology policy, no regional approach to tourism, energy, transportation, housing, agriculture, etc., without a mechanism which will facilitate the utilization of the entire science and technology capability of the region. CCST can provide precisely such a mechanism if it is well-organized and functions effectively. It is essential that the CCST be supported by all those who share the vision of the unified region. Member States of the region are called upon to endorse once more the high ideals of the Council and to support it as a mainspring to the regional development effort.

