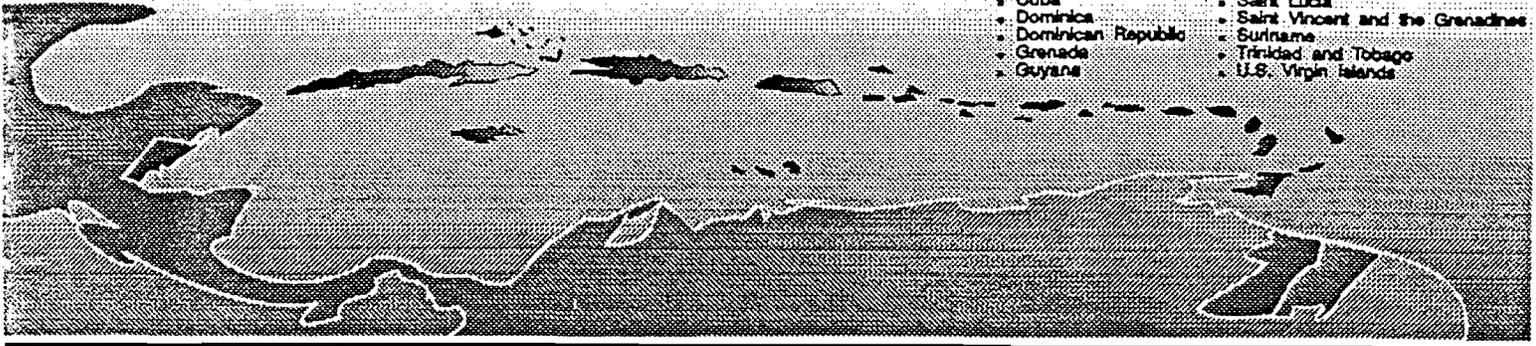


- Antigua and Barbuda
- Aruba
- Bahamas
- Barbados
- Belize
- Br. Virgin Islands
- Cuba
- Dominica
- Dominican Republic
- Grenade
- Guyana
- Haiti
- Jamaica
- Montserrat
- Netherlands Antilles
- Puerto Rico
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and the Grenadines
- Suriname
- Trinidad and Tobago
- U.S. Virgin Islands



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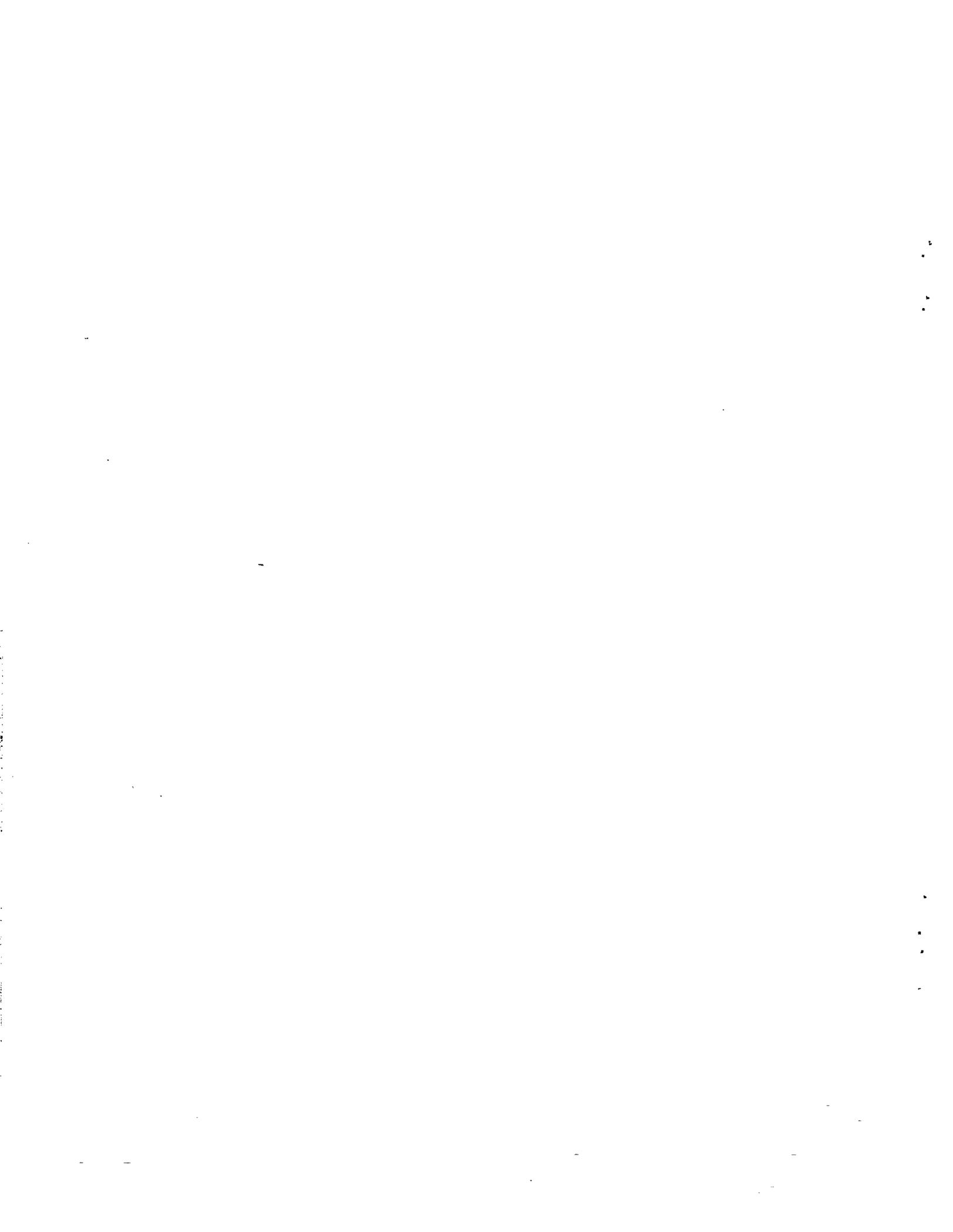
CARIBBEAN COUNCIL FOR SCIENCE AND TECHNOLOGY

Fourteenth Annual Report on CCST Activities
 December 1996 to December 1997
 Port of Spain, Trinidad and Tobago

FOURTEENTH ANNUAL REPORT ON CCST ACTIVITIES



UNITED NATIONS
ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
 Subregional Headquarters for the Caribbean
CARIBBEAN DEVELOPMENT AND COOPERATION COMMITTEE



FOURTEENTH ANNUAL REPORT ON CCST ACTIVITIES

December 1996 to December 1997

The fourteenth Plenary Session of the Caribbean Council for Science and Technology (CCST) was held in St. George's, Grenada, from 16-18 December 1996. This report describes the activities of the Council during the period December 1996 to December 1997, and is intended to inform the deliberations of the fifteenth Plenary Session of the CCST. It will cover activities programmed under the five-year work programme (1994-1998), technical assistance provided by the secretariat, new initiatives, other activities and developments, and finances of the Council.

Report of the activities of the Council in implementing the five-year work programme

The following represents the progress of the secretariat in implementing the five-year work programme (1994-1998).

Establishment of a Technology Extension Service Project

This project has been reformulated to encompass a total entrepreneurial development service, and is now referred to as the project for the establishment of Entrepreneurial Development Centers project. The main objective continues, however, to be to provide technical and technological information and assistance to small businesses in the Organization of Eastern Caribbean States (OECS). Due to funding and organizational constraints, Belize has had to be excluded from the participating countries. It is hoped, however, that the lessons learned can be shared with other member states, and that other sources of funding can be sought to implement similar projects.

Funding for the training component of the project to the amount of US\$40,000 was sourced from the United Nations Development Programme/Technical Cooperation among Developing Countries (UNDP/TCDC) Unit. The Training Workshop for the Establishment of Entrepreneurial Development Centers in the OECS was held in Saint Lucia from 1-8 November, and served to (a) train extensionists; and (b) bring partner agencies together to formulate the operational activities of the project, and define the relationships among the agencies at the national level, taking into account experiences of similar projects. Support to the project has been given by the French Cooperation Mission in St. Lucia. In addition, countries participating have been asked to request the use of STABEX funds allocated under Lomé III for project activities at the national level. A round of consultations was undertaken in participating countries, and several meetings with funding agencies held. The report of the workshop is available.

A round of visits to participating countries to determine the capabilities of Produce Chemist Laboratories (PCLs), community colleges and research institutions to deliver services under the project was undertaken by the Secretary accompanied by Mr. Aubert Parfait, Director of the Centre Regional d'Innovation et de Transfert de Technologie, Guadeloupe.

At the request of the European Union (EU), terms of reference have been formulated and submitted to the EU secretariat in Barbados with the objective of funding a consultancy to design project activities and terms of reference for project actors. It is anticipated that the EU will fund the

project to the amount of approximately US \$6 million. In the interim, aspects of the project can be implemented under the Organization of American States (OAS) funded project on agro-processing, which has been funded to the amount of US\$287,700 over two years. In time it is hoped that the UNDP and the United Nations Industrial Development Organization (UNIDO) will be able to assist in the implementation of the project.

Programme to improve the teaching of science and mathematics at the primary school level

This project has the objective of enhancing the capacity of teachers in Caribbean countries in the teaching of science and mathematics, including the use of the Internet as a teaching tool.

The OAS has approved funding for the project to the amount of US\$421,000 over two years. It is expected that this will serve to encourage other donors which have previously indicated interest in the project. The United Nations Educational, Scientific and Cultural Organization (UNESCO) has indicated that the project is acceptable and is being submitted to other donors for funding by UNESCO. Project activities are expected to commence with a meeting of the joint planning committee in mid-February.

In preparation for this, a mission was undertaken to five Caribbean countries to assess the potential of the use of the Internet as a teaching tool in the Caribbean, funded in part by UNESCO. Preliminary findings indicated that while most countries expressed interest in using the Internet in schools, the success of any initiatives would be constrained by the following factors :

- (a) Low levels of computer literacy of teachers, and the fact that teacher training had not been considered in most initiatives to introduce the use of the Internet in schools. Teacher training colleges have not been involved sufficiently in these initiatives;
- (b) Constraints of physical plant, including security considerations;
- (c) Maintenance arrangements which are expensive, or if informal, quickly break down;
- (d) High costs of purchase of computers and software; and
- (e) High costs of Internet access.

In some countries some of these problems are being addressed by teacher training, networking of teachers online, training in the use of extremely cheap software (LINUX) for networking which has extensive support on the Internet (notably in Belize, supported by the OAS), government/private sector initiatives to provide computers to schools, and preferential rates for schools arranged by Internet service providers. As well, while interest was expressed in having the Internet in schools, no structured activity beyond research was identified. As a result, the advantages of the benefits of the tool in terms of its ability to facilitate exchange experiences and collaboration of several schools on a single project will be lost unless directly addressed.

It is suggested that teacher training needs to be addressed as a first priority, to include networking, use of appropriate software so that support through a local network of schools becomes possible, and the design of structured activities. It is anticipated that these concerns will be addressed

at a pilot workshop in the use of the Internet as a teaching tool, to be held in Port of Spain in early 1998, to determine whether this aspect can be included in the regional training workshops under the science teaching project.

Through the efforts of the secretariat, two teachers from Trinidad and Tobago attended the International Workshop on the Art, Science and Technology of Learning: Designing Learning Environments for the 21st Century, held in Galilee, Israel from 16-20 November 1997, which sought to determine how to most effectively prepare students for the future, using new approaches involving integration of technology.

Assisting CCST focal points to develop individual science and technology work programmes

The objective of this programme element is the strengthening of the science and technology capabilities of member countries via the use of human resource development programmes, expertise from other member countries and institutions, visits and training.

A workshop on science and technology indicators was held in the framework of the Inter-American Network on Science and Technology (RICYT), and sought to determine national and regional strategies for determination of science and technology indicators. It was organized by the secretariat, and held in Port of Spain, Trinidad, during December 1997. Funding for this activity was provided by the OAS through RICYT. Focal points attended this meeting.

History of scientific and technological development in the Caribbean

The objectives of this programme element include: examination of the social, cultural and ecological significance of science and technology in the region from a historical basis; highlighting of Caribbean discoveries, inventions and innovations and their impact; presentation of the status of scientific and technological activities and suggesting courses for future development; and popularization of the history of science and technology and creation of scientific culture.

This proposal has not received indications of donor interest. However recent success in resource mobilization activity of the secretariat may indicate that additional time and resources could be allocated to mobilizing funds for this project, if deemed necessary by the Council.

Community development and improvement through the application of science and technology

The objective of this proposal is to create local employment, address nutritional needs through the increased use of local foods, and supplement rural income through the intervention of appropriate technologies in ongoing activities. In the short term the objective is to determine the possibility of improving both efficiency and production of ongoing activities, and to introduce new activities and products, based on resources or skills available in a community.

While no donor interest has been expressed in this proposal, it is anticipated that some of the

activities can be subsumed under the Entrepreneurial Development Project.

Facilitating the professional development of scientific personnel

This programme element seeks to promote the professional development of regional scientists and technologists, via the exchange of scientific personnel, facilitating foreign language training, and the development of project writing and analysis skills for upper management.

Given the heavy workload, plans to re-administer the training, and exchanges with universities in Puerto Rico reported at the fourteenth Plenary have not been implemented. It is anticipated that a second training workshop will be held in late 1998, geared towards high-level managers of science and technology oriented organizations.

CCST programme for science popularization

This programme element proposes to improve the image of science and technology in the subregion, and to increase the understanding of science and technology by the public. This would be achieved via science and technology fairs and exhibitions, regional awards in science and technology and use of the mass media.

One component of the regional project proposal prepared by the National Institute for Higher Education (Research, Science and Technology) (NIHERST), has on principle been approved for funding by the Caribbean Development Bank (CDB). Activities are expected to start with the visit of Yapollo, the interactive science and technology exhibition produced by NIHERST, to several Caribbean countries. It is hoped that this activity will galvanize additional support for the other activities of the project. The production of the documentary on innovation reported at the last session, in which one Caribbean inventor had been identified for inclusion, has been shelved by Eureka.

Regional database of technology services

This programme element aims to create a technology information network to assist small and medium-sized Enterprises (SMEs) to source and acquire technology and technology services. Major elements are the database and directory of technological capacity, and programmes for promotion of technological assessment.

As previously reported, it is anticipated that these activities will be subsumed under the Enterprise Development Center project. A skills registration centre specifically for technology services has been set up on the CCST website (URL: <http://www.eclacpos.org>) to initiate data collection. Publicizing of the site, however, has not yet commenced. Regarding the other data gathering activity planned, a questionnaire to institutions undertaking work in science and technology in the Caribbean has been administered. Given the low response levels, and the lack of funding to follow up this activity it was suspended pending the identification of funding. It is anticipated that this

activity will resume in 1998, given its inclusion in a project proposal submitted to the Perez Guerrero Fund "Determination of priorities for science and technology", which is reported to have been positively received.

Energy

As reported at the last session, the secretariat actively lobbied for the inclusion of several Caribbean projects in the World Solar Summit Programme, approved at the World Solar Summit, held in Harare, Zimbabwe, during September 1996.

The priorities which have been identified for Latin America and the Caribbean (See Annex 1) are: assessment of renewable energy resources, standardization and certification of renewable energy technology, training and organization to promote and operate renewable energy systems and preparation of decentralized community-type renewable energy projects. A meeting held in Guadeloupe, organized by UNESCO in early December, looked at ways to fund those projects identified as being of priority in the Caribbean.

A Memorandum of Understanding (MOU) between the Inter-American Development Bank (IDB) and the United States Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy was signed on 5 November 1996, and seeks to encourage economic growth, improve environmental quality and promote use of renewable energy and energy efficiency technologies in Latin America and the Caribbean. Other areas of focus include urban transportation, market-based approaches for meeting rural electrification needs, strategies and regulatory mechanisms for integration of these technologies.

The secretariat has held discussions with the project coordinator at the IDB, who has indicated that funding could only be allocated for project proposals pending the indications of interest by Caribbean governments. This has been requested on more than one occasion from the CCST focal points.

Collaboration with the Latin American Energy Organization (OLADE) is expected to improve with discussions having been initiated on the joint organization of a workshop in 1998.

The secretariat contributed to discussions at the Ministerial meeting on progress on the implementation of the Programme of Action for Small Island Developing States, held in November 1997, in Barbados, assisting with the formulation of guidelines for discussion on the energy aspects of the programme.

The secretariat, in conjunction with the Government of Saint Lucia hosted the annual meeting of the Caribbean Solar Energy Society (CSES) in June 1997. The report of the meeting will be made available by the CSES secretariat.

Environment

The Seminar/Workshop on Integrated Water Resources Management: Institutional and Policy Reform, endorsed at the last plenary, took place from 24-27 June 1997, in Port of Spain, Trinidad and Tobago. It was attended by over 130 representatives of CCST member countries, organizations and facilitators, and developed recommendations for action in the areas of public awareness and education, institutional coordination, water resources policy and legislation and innovative financing. The proceedings of the workshop are being prepared and will be available early in 1998.

Follow up will address the popularization of best practices in integrated water resource management and demand management.

Technical assistance

An important component of the work of the Council is technical assistance. During the reporting period, technical assistance was provided to the Government of Saint Vincent and the Grenadines, in the form of advice on the terms of reference of the proposed National Council for Science and Technology. Assistance was provided to the Government of Grenada in the holding of the National Consultation of Science and Technology and Human Resources. The secretariat also assisted the Government of Saint Kitts and Nevis in the drafting of its National Science Policy.

Other activities

Diversification of the banana industry

Following the World Trade Organization (WTO) ruling on the banana trade regime, the secretariat organized a Workshop on Alternative uses of Banana and Banana Products, held in St. Lucia on 16-18 April 1997. The workshop was aimed at finding ways of increasing the levels of earnings and decreasing the risks of the banana industry through the identification of innovative banana products and technologies for producing these. The workshop was well received by participants, and follow up activity includes the formulation of a project proposal for a pilot project on banana plant fibre production. At the High Level Meeting of Windward Islands Banana Exporting Countries, held in Dominica on 11-12 September 1997, the mandate was given to the CCST by the OECS Heads of Government to assist in the introduction of banana fibre technology to the region.

Competitiveness of SMEs

The CCST continued to be represented on the CARICOM Working Group on Competitiveness. The report of the work of the Group has been submitted to the Council of Ministers for consideration.

Cooperation with CARICOM

The CCST secretariat will be working with the CARICOM secretariat in the organization of a meeting of Ministers responsible for science and technology in the Caribbean, in mid-1998.

Strengthening of the Caribbean position at international conferences and forums

It is expected that the new work programme for the secretariat will enable it to undertake this aspect of its mandate with increased vigour and effectiveness.

New initiatives

"Lignoculture" technology transfer

A proposal for the transfer of "lignoculture" technology has been formulated. The basis for this activity is the lignin fibre, derived from bagasse, which has properties which make it extremely suitable in applications in which man-made fibres are currently used, for example in reinforcing concrete, and in resins to make a wide variety of articles. Its main advantages are its low cost, wide variety of applications, and potential for use as the basis of community enterprises. This proposal has been forwarded to the UNDP/TCDC Unit for funding.

Agro-processing

The project proposal entitled "Processing and Fresh Preservation of Foods", circulated to all CCST Focal Points for comment, has received a positive response from the OAS. Funding to the amount of US\$287,700 over two years has been identified, which will be used to establish a network of food technology institutions and other information networks, for information dissemination and to undertake training activity. (See Technology Extension Service Project on pages 1 and 2). Member countries who have not done so are asked to send letters indicating willingness to participate in the project to the secretariat before the end of the year.

Revision of regional science and technology policy

The Prime Minister of Grenada, the Honourable Dr. Keith Mitchell, had requested the assistance of the CCST with the revision of the regional science and technology policy. The Executive Committee, meeting in January 1997, agreed that a team of experts would be identified to determine which changes or additions would be necessary to bring the current policy up to date.

This process is ongoing. Documentation has been sent out to several organizations, soliciting contributions to the revision, and a team of experts has been identified, representing a cross-section of interest groups and sectors. This team will meet in early January to make recommendations for the revision of the policy.

Meeting of ministries on integrated planning and new technologies for sustainable development

This project proposal, endorsed at the twentieth Executive Committee Meeting as being of priority in CCST activities, has been positively received by the Perez Guerrero Fund which has allocated US\$37,000 to this project. It is expected that project activities will be developed in early 1998 for implementation later in the year.

Determination of priorities in science and technology policy in the Caribbean

This proposal, which has as its objective the identification of national needs which can be met through regional policy action, is intended to inform the revision of the regional science and technology policy. Its main components are the establishment of a website and database of science and technology organizations in the Caribbean, an identification of characteristics and needs of those organizations, and a workshop to identify regional priorities for science and technology policy. It has been positively received by the Perez Guerrero Fund, though no funds have been allocated yet.

Publications

Due to much increased activity, the CCST has encountered difficulty in maintaining the constant publication of the CCST newsletter. During the reporting period, one issue was published and disseminated. One more is in the process of being prepared. Joint publication of the *Agrolink* newsletter with the Scientific Research Council (SRC) of Jamaica has continued, with six issues being produced during the reporting period.

Other publications include :

Report of the Fourteenth Plenary Session of the Caribbean Council for Science and Technology - CCST/96/6

Report of the Nineteenth Executive Committee Meeting of the Caribbean Council for Science and Technology - CCST/96/7

Report of the workshop on alternatives of banana and banana production - CCST/97/1

Report of the twentieth Executive Committee Meeting - CCST/97/2

New industries and the banana industry - CCST/97/4

Staffing

The secretariat lost the services of its Junior Research Assistant during the reporting period, as she left to pursue studies at the graduate level. The Technical Cooperation Assistant, having succeeded in the General Service to Professional Examination will be promoted and assigned to another United Nations office. The Secretary of the Unit has resigned. Plans are afoot to employ a Technical Cooperation Assistant as well as a Secretary. As well it is anticipated that additional staff will be employed on projects as approved.

Meetings at which the Council was represented

The CCST was represented at the following meetings of the secretariat :

Twelfth Annual conference of the National Association for Science, Technology and Society. Pennsylvania, United States of America, 6-9 March 1997

Twentieth Meeting of the Standing Committee of Ministers Responsible for Agriculture, and Joint Meeting of Ministers of Agriculture of CARICOM and CORECA. Belize City, Belize. 26-29 May 1997.

CARILEC CEOs Symposium, 1997. Nassau, Bahamas. 29-30 May 1997.

First Regional Workshop of Caribbean Institutions of Higher Education in Agriculture. Port of Spain, Trinidad. 3-7 June 1997.

Sustainable Alternatives for Tropical Island States (SATIS) '97. Castries, Saint Lucia. 11-13 June 1997.

Meeting of the Association of Caribbean States on Science, Technology, Health Education and Culture. Barbados. 17-19 June 1997.

High Level Meeting of Windward Islands Banana Exporting Countries. Roseau, Dominica. 11-12 September 1997.

Council Finances

The balance of Council finances as at 30 November 1997 stood at US\$-29,095.93. Total contributions due for 1998 are US\$60,000, while arrears to date total US\$222,517.51. Annex 2 indicates the annual assessed contributions and arrears to end 1997 for member countries.

implementation and follow-up. The training should include the preparation, initially in Spanish, of principles and guidelines for project preparation, as well as systems design and implementation methodologies of relevant technologies. These materials will be distributed through the Ibero-American Network of Rural Electrification with Renewable Energies (RIER) and the documentation unit of the proposed regional centre to support technology transfer.

Preparation of decentralized community-type renewable energy projects. This project aims at improving the quality of life in rural communities located far away from the power grid through the utilization of photovoltaic systems for the production of electricity. Rural electrification requires an appropriate infrastructure, including the development of a local industry, not only to manufacture the equipment or some of its components, but also to provide engineering, installation and maintenance services. The involvement of the local cooperatives, associations and population in general, at all stages of the project preparation and subsequent implementation and operation, is crucial to ensure its acceptance and ultimate success.

CCST member country annual assessed contributions and arrears

Country	Annual assessed contrib.	Arrears to end 1997
Antigua and Barbuda	\$2,000.00	\$10,000.00
Barbados	2000.00	2000.00
Belize	2000.00	6000.00
Dominica	2000.00	4000.00
Grenada	2000.00	12000.00
Haiti	2000.00	12000.00
Saint Kitts and Nevis	2000.00	2000.00
Saint Lucia	2000.00	0.00
Saint Vincent and the Grenadines	2000.00	12000.00
United States Virgin Islands	2000.00	12000.00
Cuba	8000.00	48000.00
Guyana	8000.00	45019.23
Jamaica	8000.00	41498.28
Suriname	8000.00	16000.00
Trinidad and Tobago	8000.00	0.00
TOTALS	\$60,000.00	\$222,517.51

