

Progress Report 7

January – June, 2000

Caribbean: Planning for Adaptation to Global Climate Change

A Joint Project of OAS-CARICOM-UWICED-World Bank-GEF

DRAFT

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Acronyms

ARNC	Acting Regional Network Coordinator
CARICOM Secretariat	Caribbean Community Secretariat
CARICOMP	Caribbean Community Productivity
CDB	Caribbean Development Bank
CDERA	Caribbean Disaster and Emergency Response Agency
CDM	Clean Development Mechanism
CEIS	Caribbean Energy Information System
CERMES	Center for Resources Management and Environmental Studies
CGCED	Caribbean Group for Cooperation in Economic Development
CIDA	Canadian International Development Agency
CIHM	Caribbean Institute of Hydrology and Meteorology
CMS	Center for Marine Sciences
COTED	Council for Trade and Economic Development
CPACC	Caribbean: Planning for Adaptation to Global Climate Change
CREDP	Caribbean Renewable Energy Development Project
CRIS	Coastal Resources Inventory Systems
CTO	Caribbean Tourism Organization
CZMA/I	Coastal Zone Management Authority and Institute
CZMS	Coastal Zone Management Specialist
DEHS	Department of Environmental Health Services
EPA	Environmental Protection Agency
FD	Fisheries Department
GCSI	Global Change Strategies International Inc.
GEF	Global Environment Facility
GHG	Greenhouse Gases
GIS	Geographic Information Systems
GS/OAS	General Secretariat of the Organization of American States
ICZM	Integrated Coastal Zone Management
IMA	Institute of Marine Affairs
ISC	Information Systems Coordinator
MOU	Memorandum of Understanding
NFPs	National Focal Points
NICUs	National Implementation Coordinating Units
OAS	Organization of American States
PAC	Project Advisory Committee
PDF	Project Development Facility
PLC	Pilot Local Consultants
QA/QC	Quality Assurance/Quality Control
RPIU	Regional Project Implementing Unit
SA	Screening Assessment
SIDS	Small Islands Developing States
STAP	GEF Scientific and Technical Advisory Panel
UNDP	United Nations Development Program
UNFCCC	United Nations Framework for the Convention on Climate Change
US FGDC	U.S. Federal Geographic Data
US NOAA	National Oceanographic and Atmospheric Administration
USAID	U.S. Agency for International Development
USDE	Unit of Sustainable Development and Environment
USDOE	United States Department of Energy
UWI	University of the West Indies
UWICED	University of the West Indies Centre for Environment and Development

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Executive Summary

Project Implementation

The project has continued its full implementation. Major advances have been accomplished both in the technical aspects as well as in the future sustainability of the project. The Caribbean: Planning for Adaptation to Global Climate Change (CPACC) is now gaining recognition in the region as the source for technical information on climate change.

Initial agreements have been reached between the Global Environment Facility (GEF), the World Bank, the Organization of American States (OAS) and the Regional Project Implementing Unit (RPIU) to prepare a proposal for a new activity on climate change in the Caribbean region. The Council for Trade and Economic Development endorsed this idea and implementation arrangements (COTED oversees environmental issues in the Caribbean). Co-financing for this new activity is under negotiation from regional private sector industry and national governments as well as donors from outside the region. The GEF Project Development Facility, PDF, (Block B) will be utilized to establish the Caribbean Climate Change Center and prepare the full future proposal. A brainstorming session was organized to solicit ideas from a wide cross section of regional personnel on the idea of this new activity. The participants to the session agreed that the main objectives of the new activity should include: replication of CPACC's pilot components regionally when appropriate; support and coordinate the preparation of the United Nations Framework Convention on Climate Change (UNFCCC) Second National Communications; identify and implement appropriate technical and financial response mechanisms for adaptation to global climate change (stage II of UNFCCC) and assist countries in incorporating climate variability and change considerations into their development planning process (continuation of CPACC's Component 4).

Component 1 will be replicated in the context of Central America through a project financed by the U.S. Agency for International Development (US AID), through the US National Oceanic and Atmospheric Administration (US NOAA) and executed by the General Secretary of the Organization of American States (GS/OAS). The CPACC web site is undergoing a review with support from the World Bank. CPACC continues to support participants to the one-year modular program on Geographic Information Systems (GIS) at the University of West Indies (UWI) Barbados and Trinidad and Tobago. National Coastal Resources Inventory Systems (CRISs) have advanced considerably: about 70% of the existing data have been incorporated into the CRISs. The implementation plan for Component 4 was developed and is under implementation. National climate change issues papers will be prepared in the next six months. Coral monitoring was completed in the three countries and data is now being processed. A series of socio-economic surveys on potential impacts of sea-level rise was completed in Guyana and Grenada. It was decided that Components 7 and 8 can not be merged and implemented in all five pilot countries. Instead, consultants for both components will be required to make an assessment and preliminary recommendations on economic valuation. The initial national communication for St. Vincent and the Grenadines was completed and is now waiting endorsement from the government.

CPACC was selected for a Special Achievement in GIS award by the ESRI, leading producer of GIS software, to be presented at ESRI's 20th User's Conference (June 2000). The award for outstanding work in the GIS field was based on the CRIS process.

Next six months

July – December 2000 will bring a very active period in CPACC not only regarding the specific of its implementation but also on its sustainability. The pilot components will have the first set of draft outputs. A PDF-B for GEF funding will be prepared to start up, if approved, in January 2001.

Financial Status

The table below shows a snapshot of expenditures cleared by the OAS Financial Services as of, 1999 (this includes expenditures at UWI). In addition, the last two columns on the right show the new disbursement profiles for the last two years of the project (April 2000 through December 2001).

According to Project Components

Component	Cumulative since project effectiveness April 97 – March 2000	Expenditures as a% of total budget	To be claimed Year 3 (January – March 2000)	Expected Year 4 (April 2000 – March 2001)	Expected Year 5 (April – December 2001)
1. Design /Establishment of Sea Level/Climate Monitoring Network	\$701,668	86	\$75,100	\$71,080	\$13,700
2. Establish Database and Information System	\$161,165	41	\$47,100	\$131,450	\$52,050
3. Inventory of Coastal Resources and Use	\$156,683	22	\$54,050	\$500,000	\$6,000
4. Policy Framework for Coastal and Marine Management	\$21,775	7	\$21,000	\$182,150	\$77,750
5. Coral Reef Monitoring	\$135,959	35	\$85,000	\$169,450	\$85,000
6. Coastal Vulnerability and Risk Assessment	\$100,483	24	\$52,900	\$179,300	\$85,400
7. Economic Valuation of Coastal and Marine Resources	\$58,099	19	\$10,000	\$159,500	\$81,500
8. Economic and Regulatory Proposals	\$9,446	5	\$23,900	\$119,000	\$39,500
9. Greenhouse gases inventory/agri-water resources assessment	\$74,559	62	----	\$26,500	\$13,680
RPIU	\$1,160,636	56	\$137,500	\$484,000	\$258,700
Executing Agency	\$442,879	65	\$38,000	\$128,700	\$106,900
Contingencies	\$63,767	26	\$32,500	\$64,000	\$82,500
Total Project	\$3,087,118	46	\$500,000	\$2,190,000	\$880,000

CPACC Administration

Executing Agency: Organization of American States

The GS/OAS continued to provide technical, management and financial oversight of project implementation. During the period under review, the GS/OAS has been involved in several activities, including:

(a) Caribbean Group for Cooperation in Economic Development (CGCED)

CPACC played an active role in the CGCED meeting held at the World Bank (June 12 - 15, 2000). This meeting is held every two years and is attended by high-level government officials (Prime Ministers, Ministers of Planning and Finance) of 15 Caribbean countries, and high level representatives of all bilateral and multi-lateral donors. An extensive CPACC exhibit was prepared and displayed during the duration of the meeting. In particular, the equipment and a web-based live data display of the 18 operating CPACC stations was presented.

(b) Support to RPIU staff

The Center for Training and Development of the OAS provided assistance to the RPIU staff pertaining to office morale, staff perceptions of their job, conflict resolution, problem solving, team motivation and organization of work. A series of recommendations will be implemented during the next six months.

(c) World Bank supervision mission

The GS/OAS and RPIU coordinated the fourth World Bank supervision mission. The main objectives of the World Bank mission were to review progress to date on project implementation, review financial management arrangements, and discuss possible follow-up activities. The Bank commended the OAS and the RPIU staff for their dedication to the project. Project overall implementation performance was rated satisfactory. The Bank noted that all project components are under execution, albeit with some delays. These delays have caused a bunching of project implementation activities towards the end of the project, which may create some problems. For the remainder of the project, there will be a need to increase the pace of execution and consequently the rate of disbursements. All major participants in project implementation, namely GS/OAS and RPIU, will be required to optimize staff time by setting distinct priorities and deploying the maximum manpower to the field in support of the implementation of the different components. (Annex 1)

(d) Component 1 in Central America

Given CPACC's experience and successful implementation of Component 1 in the Caribbean region, the US NOAA approached the OAS to request its assistance for implementing a Component 1 like activity in Central America. The project has now been approved and it is under execution at the Unit for Sustainable Development and Environment, OAS. (Annex 2)

Regional Project Implementation Unit (RPIU)

Office Space

The RPIU continues to occupy premises at the Lazaretto Complex, provided by the Government of Barbados. The building's space is already in shortage given the increase

in the number of technical and non-technical staff at the RPIU. The conference room had to be converted into two offices and some of the technical staff are sharing office space.

RPIU Staffing

During the reporting period, the services of Ms. Judi Clarke and Mr. Rawleston Moore were engaged. Ms. Clarke is providing logistical support to Components 3, 5, 7 and 8. In collaboration with Ms. Perch, Ms. Clarke will produce material for the public awareness program.

Mr. Moore's major responsibility is to provide assistance in the implementation of Component 6 and some critical support to Component 4 activities. In addition, Mr. Moore is also coordinating (for the University of West Indies Centre for Environment and Development - UWICED) the regional UNDP/GEF climate change enabling activities project.

The services of a consultant, Mr. Carlton James were engaged to initiate a public awareness and education program for CPACC in keeping with the recommendations from the mid-term review.

Part time services of a UWI student have also been contracted to support maintenance and updating of the web site.

Financial procedures and reporting

A procedural manual for internal administrative and financial transactions at RPIU has not been completed yet. Price Waterhouse Cooper-Barbados is finally preparing the manual despite some delays and will be available in the near future.

The RPIU was recently connected with the University accounting system via Internet. There were some technical difficulties that delayed this but were finally solved.

During the last World Bank supervision mission, a Financial Officer from the Latin America and Caribbean region of the Bank reviewed the financial and reporting procedures of the RPIU through in depth discussions with the RPIU and the University Bursary. He found the procedures to be satisfactory.

World Bank Supervision Mission

The World Bank conducted the fourth supervision mission on March 28-29th, 2000. The World Bank's major concern was the successful completion of CPACC on time and with full disbursement.

Project Sustainability

- (a) Canadian Government. The Caribbean Community (CARICOM) Secretariat in coordination with RPIU requested assistance from the Canadian Government, specially the Geological Services Division of Canada, to obtain a comprehensive set of physical information on the Caribbean coastlines.
- (b) Government of Finland. Representatives from the Finish Ministry of Foreign Affairs and Meteorological Services visited the RPIU. Discussions centered on a proposed Finnish program to provide assistance in the region to further develop the meteorological network. It agreed that there was room for synergy between Component 1 and the proposed Finish project. They anticipate setting up an office with two professionals (a meteorologist and a communications technician) in an

established regional entity. CPACC may be considered as the entity to provide overall administration and coordination of the project.

Public Awareness Strategy

- A workshop for the Regional Media (electronic and print) on climate change was held in Trinidad and Tobago, April 2000 (Annex 3).
- A workshop for the Regional Private Sector was held at the headquarters of the Petroleum Industry of Trinidad and Tobago (Petrotrin) (May 2000). (Annex 4). The objective was to sensitize Caribbean private sector executives to the phenomenon of Climate Change, its anticipated impact, consequent challenges and opportunities. A hoped-for outcome is increased awareness, interest and action at the regional level. In particular, the seminar provided a forum for presenting and analyzing initiatives currently underway primarily in the industrialized countries, and for a presentation of perspectives of Caribbean Private Sector executives and development professionals. Areas covered include insurance, banking, petroleum, manufacturing, tourism and Agriculture.
- An information kit on climate change issues of importance to the Caribbean has been developed. These kits were available to participants at the two workshops.
- The Public awareness consultant participated in a Canadian conference on Climate Change Public Awareness Strategies and Experiences (Waterloo, June 2000).
- Whenever the opportunity arises the Project Manager and the Public Awareness Consultant promote greater awareness of climate change issues in general and CPACC in particular among senior regional political and private sector personalities.
- The Barbados monitoring station was handed over to the government at a public ceremony held under the umbrella of the meeting of the 12th Ministers of the Environment of Latin America and the Caribbean. Several ministers, government functionaries and donor agency representatives attended.
- Radio clips for dissemination by prominent Caribbean personalities are to be prepared.
- Advocacy with senior regional political and private sector personalities is a continual process.

RPIU participation in international, regional and national workshops and conferences

(a) The Project Manager participated in the following meetings:

- Caribbean Renewable Energy Development Project (CREDP) Board (February 2000, Grenada). The project, currently funded by a GEF Block B, is coordinated by the Caribbean Energy Information System (CEIS, based in Jamaica). The objective of the meeting was to discuss the draft project proposal, for GEF funding, under GEF's program on "removal of barriers for implementation of renewable energy projects." The proposed project will address: removal of policy barriers to large-scale use of renewable energy in the region; raising public awareness on renewable energy technologies; building regional capacity in renewable energy technologies, project development and appraisal; and implement renewable energy demonstration projects in the region. Project funding will be through a portfolio of funds derived from investment funds, and funds for incremental activities from the GEF and funds for technical assistance and capacity building from the donor community. Over a five-year period it is estimated that a fund of US\$10 million will be required for a 4-year period. The fund established should be managed by the Caribbean Development Bank (CDB). Project management and oversight will be by a regional steering Committee and project implementation by a Project Management Unit. The meeting recommended that this Unit be placed in CARICOM.

- GEF Scientific and Technical Advisory Panel (STAP) on Small Islands Developing States (SIDS) (February 2000, Barbados). The workshop was organized to promote a dialogue with regional stakeholders on issues pertaining to GEF operational programs and regional sustainable development priorities.
 - 12th Forum of Ministers of the Environment of Latin America & the Caribbean (March 2000, Barbados). The meeting afforded an excellent opportunity to network and to raise the profile of CPACC. The forum agreed to lend support to the Caribbean Climate Change Center (Decision 6) and to urge member countries to ratify the Kyoto Protocol (Decision 7).
 - UNDP/GEF Workshop on Climate Change Vulnerability (March 2000, Trinidad and Tobago).
 - Caribbean Tourism Organization (CTO) regional meeting on Sustainable Tourism. The Project Manager made a presentation on climate change and sustainable tourism in the Caribbean.
 - Jamaican Coastal Conference. The Project Manager delivered the keynote address at this conference which was convened to consider the development of a government green paper on Integrated Coastal Zone Management (ICZM).
- (b) Deputy Manager/Coastal Zone Management Specialist (CZMS)
- (c) The Information Systems Coordinator participated in the following meetings (ISC)
- The 20th Annual ESRI International Users Conference, San Diego, June 26-30, 2000.
- (d) The Public Relations Officer participated in the following meetings:

Caribbean Climate Change Center

Brainstorming session

This session was arranged under the umbrella of the World Bank Supervision Mission and was designed to solicit ideas from a wide cross-section of regional personnel on the idea of CPACC follow-up activities and the establishment of the Climate Change Center. A full report of the meeting is provided as Annex 5.

Meeting with the Secretary General, CARICOM Secretariat

The CPACC Project Manager met with CARICOM's Secretary General to discuss CPACC and CARICOM's role in the project's future development. The Secretary General was very interested in ensuring that CARICOM provides the avenue for continued political support and endorsement of CPACC initiatives. In particular, the following actions were agreed:

- CPACC was considered at the Council for Trade and Economic Development meeting (February 4-8th 2000). A decision was taken that "authorized the present implementation team for CPACC, viz, CARICOM, UWICED, OAS and the World Bank to submit a request to the GEF for a medium size grant for the development of a full proposal for the establishment of the Centre." (Annex 6).
- CPACC will approach the Prime Minister of Belize (Government Head elected during the Heads meeting in March with responsibility for Environment) for the purpose of advocacy on climate change matters.
- The Chairman of the PAC should be someone at the level of Deputy Secretary General in order to accord the necessary status to this committee.

- CPACC should establish closer ties with CDERA and the CTO as these two organizations are firmly entrenched in the regional political system. Strategic alliances with them will facilitate acceptance and passage of climate change activities through the regional political system.

National Implementation Coordinating Units

- The interim National Focal Point (NFP) for Belize, Mr. Henry Usher, left his post in June 2000. A replacement will be appointed until July 2001 when Ms. Zenaida Moya, Belize Focal Point, is scheduled to return.

Capacity-building Activities

CPACC sponsored a series of training workshops during this period (for more details, see relevant component below):

Technical Workshops

- Workshop on Data Collection and Automation in GIS (Component 3), March 20-25, 2000, Cable and Wireless Training College, St. Lucia. During this workshop, 26 participants from 11 countries were trained (see Annex 7).

Hands-on training

- Training on monitoring stations equipment calibration for CIMH staff.

Certificate Programs

- CPACC continued to sponsor participants from Antigua and Barbuda, Belize, Grenada, Guyana as well as CIMH (Barbados) and the Institute of Marine Affairs (IMA) (Trinidad and Tobago) in the one year Certificate in Geographic and Land Information Systems at the Barbados and Trinidad and Tobago campuses of UWI (see more information under Component 3).

Other Matters

UNDP/GEF Support Program

The UNDP/GEF National communications support program has been put in place in the region (through UWICED) to provide assistance to the Caribbean countries. Professor Al Binger, Messrs. Brian Challenger and Rawleston Moore are involved in the implementation. The program sponsored a regional workshop on Vulnerability and Adaptation in Trinidad and Tobago (March 2000). There are plans to hold a COP6 preparatory workshop in conjunction with CPACC later this year.

Suriname

The Project Manager met with Mr. Tito Santos, UNDP Coordinating Officer for the Enabling Activities Program in the Caribbean to discuss Suriname's participation in CPACC. Mr. Santos agreed to use his office to catalyze action in this regard as funds were allocated to Suriname's project under UNDP to facilitate the development of an interface with CPACC.

A visit was made to Suriname by a CPACC team regarding Suriname's participation in the CPACC project. A proposal was sent to Suriname outlining areas for collaboration and the terms for such collaboration. No response has been received yet.

Clean Development Mechanism – Baselines

One of the outcomes of a regional consultation on the CDM sponsored by CPACC was a proposal to develop a regional project, which will examine the development of regional baselines and a portfolio of regional projects eligible for CDM support. Such a project proposal was developed in consultation with Global Change Strategies International Inc. (CGSI/Canada), Clean Air Policy Institute (USA) and the Commonwealth Science Council. The proposal was discussed with Caribbean participants at COP5 in Bonn and amended to reflect suggestions made at that meeting. Funding for the first phase of implementation obtained from the United States Department of Energy (USDOE) and the Canadian International Development Agency (CIDA) was utilized to host a workshop in Barbados on March 8th to develop details of the implementation.

The management of this initiative has been passed on to the Caribbean Energy Information Systems (CEIS) Network, and work has just commenced on the compilation of data required to estimate the baseline. It is anticipated that some indication of the status of this exercise will be ready for presentation at COP6.

Commitments and Replenishments

Withdrawals from CPACC account	Expenditures incurred during	
Initial advance:	Advance	\$500,000
Withdrawals 2 through 6	CY1: April 97- Dec. 97	\$781,182
Withdrawals 7 through 12	CY2: Jan – Dec. 98	\$869,003
Withdrawals 13 through 18	CY3: Jan. – Dec. 99	\$1,028,026
Second Advance	Dec. 99	\$300,000
Withdrawals 19 through 23	CY4: Jan. – Dec. 00	651,911
Total from CPACC Special Account at World Bank	April 97 – June 2000	\$4,130,122

CPACC Technical Activities

Component 1: Design and Establishment of Sea Level/Climate Monitoring Network

Installation of monitoring stations

Completed.

Station Configuration and Equipment Installation

All 18 monitoring stations have been installed and are functioning.

Regarding the earth ground station, an agreement is now under negotiation with the University of the West Indies Centre for Geo-Spatial Studies (St. Augustine) for siting the facility.

Operation, Maintenance and Calibration

The Sea Level and Climate Monitoring Network Replacement Fund was established at CIMH, Barbados with the transfer of US\$50,000 from the CPACC Special Account and with the first meeting of the Fund Oversight Committee. Minutes from the meeting are attached as Annex 8.

It was expected that the Acting Regional Network Coordinator (ARNC) was going to visit at least 6 of the 12 participating countries during this period to conduct training at the local level in the use and application of data from the CPACC monitoring stations. Unfortunately, due to conflicts with visit scheduling, the ARNC visited only one, Trinidad and Tobago.

Data Acquisition, Achieving and Dissemination

Launching of the Tidal Calendar by IMA. Using sea-level data derived from CPACC monitoring system IMA developed and published a Tidal Calendar for Trinidad and Tobago with financial support from CPACC. The calendar was launched on January 14 at the IMA.

Geocentric Fixing of Benchmarks

The two Continuously Operating Reference Stations (CORS) were visited during the last six months (Jamaica and Barbados). The main objective of the visits was to upgrade software and hardware. The site for the CORS station in Barbados will have to be moved since the Coastal Zone Management Unit will add an addition to the building where the CORS' antenna is located. An agreement is under negotiation with the Lands and Surveys Department to move the antenna and equipment to its office.

In addition, US National Geodetic Services (US NGS), who is assisting CPACC in this component, conducted two geocentrix fixing of benchmarks for one of the stations in Jamaica (Port Royal) and in Barbados (harbor pier).

Component 2: Establishment of Databases and Information Systems

Information Systems Coordinator

The ISC supported Component 3 Inventory of Coastal Resources process through assisting in the oversight and facilitation of the consultants' activities. This included accompanying the consultants on rapid data verification and collection missions to St. Lucia, Dominica, Grenada, Antigua and Barbuda, the Bahamas and Belize between May and June 2000.

Coordination of SIDSnet National Workshops

National workshops were conducted in St. Kitts and Nevis and Antigua and Barbuda early in the year. These two workshops concluded the round of national workshops agreed with UNSIDSnet. The delivery of certificates to workshop participants has been delayed due to late receipt and finalizing arrangements to meet costs of preparation and transmission. The final SIDSNet report has also been delayed due to higher priority activities and the late completion of the workshops.

System Procurement

Specifications for computers, peripherals and software for the CPACC country repositories, selected Component 1 lead agencies and the CIMH were completed and four sets of quotations requested and received. National Focal Points in each of the countries have been requested to confirm that the repositories will utilize the computer and associated equipment. Responses have been received from most agencies either in written or verbal form confirming arrangements. Four new laptop computers were purchased for RPIU staff.

Training Program

The remaining funds in the training program were utilized to support the Component 3 Data Collection and Automation in GIS Workshop held at Cable and Wireless Training College, St. Lucia from March 20-25, 2000 (see Component 3 for more information).

System Implementation, Maintenance and Upgrading

The CPACC web site is presently under review with support from a UWI student and an external reviewer provided by the World Bank. Some of the proposed changes include:

- Restructuring of the front page, the frames and the general design;
- Establishing country pages for each of the 12 participating countries;
- Addition of maps illustrating the pilot component areas in the respective countries.

Generally, the website has seen an increase in usage from the previous reporting period. Visits to the site for current and recent past periods were as follows (some weekly information was not available):

Period	Average	High
January – June, 1999	84	137
July – December, 1999	118	169

January – June, 2000	161	217
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Trouble shooting of the CPACC LAN and components continued during this period. Software was purchased for the CPACC workstations and computer equipment was repaired or replaced. The UWI student who assists the ISC in the maintenance of the website was given extended responsibilities during the summer vacation period to assist in providing technical support to the RPIU for routine activities, particularly in the absence of the ISC.

No specific activities were undertaken in the participating countries. It is expected that a new round of country computers will be purchased in the next six months.

CPACC has reserved the domain name www.impacc.org for the follow-up to CPACC. The cost is US\$70 for 2 years.

Component 3: Inventory of Coastal Resources and Use

GIS installation and upgrade: Collaboration with CERMES and Engineering Institute

CPACC continued to support participants to the one-year modular program on Geographic Information Systems at UWI campuses in Barbados and Trinidad and Tobago:

- Mr. Rajkumar Singh from Guyana in Trinidad and Tobago;
- Mr. Michael Mason from Grenada in Trinidad and Tobago;
- Mr. Philmore James from Antigua and Barbuda in Barbados; and
- Mr. Ian Gillet from Belize in Barbados.

The candidates only need to travel to the respective campuses for their last set of exams, which are scheduled for August 2000. In Mr. Gillet's case, he is exploring the option of doing his exams in Belize to avoid the costs and time involved in his travel to Barbados.

Under this activity, arrangements were investigated to purchase ESRI software through the respective country distributors but at a group discount price. The software will be distributed with the computers for the CPACC repositories to facilitate management, application and distribution of the CRIS. The purchasing arrangements are largely completed and this can start when funds are available.

Regarding the specific requirements of the countries who are to be supplied with GIS software, some have indicated a preference for extensions to the specific software being purchased. These requests will incur greater costs and therefore the countries in question will need to justify their requests. Furthermore, where software is meant to serve a pilot component activity, additional costs may be met from the pilot budget.

Coastal Resources Information Systems (CRISs)

The CRIS is the main deliverable under Component 3. The objectives of the CRIS are as follows:

- Facilitate storage, retrieval, updating, analysis and manipulation of coastal resource data (including spatially referenced information) in each of the 12 participating countries; and

- Facilitate the sharing of coastal resource data within and between countries in the Caribbean.

CPACC was selected for a Special Achievement in GIS award by ESRI, the leading producer of GIS software, to be presented during their 20th User's Conference. The award for outstanding work in the GIS field was based on the CRIS process. The ISC also presented a paper on the CRIS process during the conference (Annex 9).

Module I (Data Assessment) and Module II (Data Cataloguing and Metadata Standards) have been completed.

CPACC has established an agreement with the US Federal Geographic Data Committee (FGDC) to use its clearinghouse web site (<http://www.fgdc.gov/clearinghouse>) for displaying metadata from CRIS. The FGDC clearinghouse is a database of all clearinghouse nodes participating in the clearinghouse activity. The site provides access to registry functions including: adding a new node to the clearinghouse, browsing through the existing node information, and modifying of existing information in the database.

Module 3: Database Design and Management

One of the deliverables by the consultants prior to completion of the CRIS is the Systems requirement report. The purpose of this report is to ensure a clear understanding of the final product and its structure and thereby allowing countries to properly use and manage it for decision making.

This document was circulated in electronic form to all relevant parties, for review and comment. Comments were requested before July 3, 2000.

Module 4: Data Collection

Data on biophysical environmental features and resources types were ranked in order of priority for collection for each of the CPACC pilot components. Dr. Opadeyi (UWI/St. Augustine) has indicated that approximately 70% of the existing data on coastal resources and uses that must be incorporated into the CRIS, has been collected by the APA consultants during the Data Verification and Acquisition Missions to CPACC countries.

The RPIU established dialogue with suppliers of LIDAR and remotely sensed data during the first quarter of 2000. Preliminary definitions of the aerial extent of pilot sites were received in February and March 2000 from Jamaica, Dominica, Trinidad and Tobago, The Bahamas, Grenada, Guyana and Belize. These countries had selected the sites for the pilot components. New quotes have been received from LIDAR, CASI and IKONOS².

Component 4: Formulation of a National Climate Change Policy

Review of Methodology

The services of a consultant were engaged to:

- Review and analyze current policies, legislation and institutional mechanisms for adaptation planning for climate change in the context of coastal zone management.
- Review, analyze and evaluate existing policies, legislation and institutional mechanisms in selected countries worldwide.

² LIDAR = ; CASI = Compact Airborne Spectrographic Imager; IKONOS =

- Outline the most appropriate policy, legislation and institutional options to be used in the implementation of Component 4.
- Outline the data, human resources and institutional arrangements necessary to implement appropriate policy, legislation and institutional options to be used in the implementation of this component.

The draft report was discussed with the consultant, and based on a feedback from the CPACC network the report was finalized and circulated to member countries. The paper is now available through the CPACC web site.

The process for the implementation of Component 4 is now being refined through discussions with the consultant and other technical personnel. The first stage in the implementation, which requires the definition of an issue paper, will be an in-country exercise. For this purpose a template is being designed to guide the development of the national issue papers.

Component 5: Coral Reef Monitoring for Climate Change

The services of Ms. Marcia Creary have been engaged as Data Analyst at the UWI / Jamaica.

Site Selection and Methodology

(a) The Bahamas

Monitoring in The Bahamas was conducted during the months of June and July 2000, as follows: Sea Viking (New Providence) – June 26-30, 2000; and Walker's Cay (Abaco) – July 3-8, 2000.

Manpower and logistic support were cited by the Fisheries Department (FD) as obstacles to complete the monitoring activities. A Memorandum of Understanding (MOU) was established between the Fisheries Department and the Department of Environmental Health Services for a boat and diver to be made available to assist with the monitoring of the New Providence site. The Fisheries Department intends to seek the assistance of the Patrol Craft stationed at Treasure Cay in the Abacos to gain access to the Walkers Cay, given that this site is quite remote.

The selection of the third monitoring site has not been finalized. It has been proposed that the Lee Stocking Island site be moved to within the boundaries of the Exuma Cay Land and Sea Park. This park has been established as a protected area for 20 years with no fishing within its boundaries since 1986. An MOU was proposed with the Island School located on the nearby Eleuthra to assist with logistic support in the form of equipment, boats, and manpower. San Salvador has also been suggested as a possible monitoring site. A scientific field station is located there, which could potentially provide logistic support and background environmental data.

Regardless of which site is finally selected it is proposed that monitoring take place by November before the weather conditions deteriorates.

(b) Belize

Belize had carried out monitoring activities in November 1999 but this exercise had to be repeated because of mistakes made in the video taping protocol. The video monitoring of all three monitoring areas (Glover's Reef, Hol Chan and South Water Cayes) was

repeated during the period April to June 2000. However, on this occasion the protocol was again not strictly followed as the Fisheries Department monitored only ten transects (20 meters each) for Hol Chan and 20 transects (10 meters each) for Middle Caye at Glover's Reef.

The Fisheries Department indicated that manpower constraints and weather conditions made it difficult to conduct monitoring. They did however, indicate that they would be willing to assist with up to 40% of the processing of the video tapes if they obtained a capture board.

(c) Jamaica

Jamaica was able to resolve the issues it had regarding site selection. Monitoring at previously selected sites presented logistical problems that could not be easily resolved. Based on discussions held in a planning meeting organized by Component 5 (May 10, 2000), the following monitoring sites were proposed: Monkey Island, Portland; Southeast Cay, Port Royal; and West Fore Reef, Discovery Bay. All of these sites were monitored during the month of June. This represents the completion of the coral reef monitoring in Jamaica for this year.

Data Processing and Data Analysis

A number of problems were experienced with the CPACC computer at UWI's Data Processing Center (Jamaica), which affected the data processing and analysis. The computer hard drive was reformatted and partitioned and the software reloaded. The automated dotting process as well as Internet and email facility still needs to be fully reestablished on the CPACC computer.

Mrs. D. Linton (CARICOMP Data Manager) developed a draft C5 Relational Database in Microsoft Access. This new database is fashioned of the existing format and code system employed by CARICOMP. It is expected that when this database is finalized it will allow for easier data entry, manipulation and extraction of information. Until such time the existing Microsoft Excel spreadsheet will be used.

(a) The Bahamas

A copy of the dotted images obtained from monitoring carried out at the Sea Viking site, New Providence during November 1999 was received on CD.

(b) Belize

The Coastal Zone Management Authority and Institute (CZMA/I) has employed a replacement Reef Biologist, Ms. Nadia Bood to conduct the data processing and analysis. She started in mid June and will have to be trained in the capturing, dotting and analyses methodologies. The CPACC computer requires formatting and partitioning which has to be done before the capture, dotting and analysis can take place. The CZMA/I is aware of these requirements. Mr. Jeff Miller was also requested to provide Ms. Bood with an updated "Protocol for Video Methods". Videotapes for Middle Caye, Glover's Reef were collected while those for Hol Chan were left in Belize to be used for training, as there were no facilities to copy the tapes.

(c) Jamaica

Videotapes of monitoring carried out at Southeast Cay, Port Royal during June were received.

Supporting Data

(a) The Bahamas

Although there is water quality data for the harbours, public beaches and hotel areas in New Providence collected by the Department of Environmental Health Services in The Bahamas none of the monitoring takes place within Component 5 coral monitoring sites. The DEHS has indicated that it also has manpower constraints and is in the process of trying to obtain a number of HYDROLABS to be deployed for periodic download of water quality data. The HOBO TEMP meters obtained by the Fisheries Department were deployed and are due to be retrieved. Topographical maps were obtained.

(b) Belize

The CZMA/I in *Belize* has water quality monitoring sites that correspond to the sites selected for C5 coral reef monitoring (except for Glover's Reef). The possibility of CZMA/I adding Glover's Reef to their monitoring programme was explored. The two HOBO TEMP meters that were deployed at Hol Chan have been lost. Those to be deployed at Glover's Reef and South Water Caye will be encased in artificial housings to protect them and reduce their visibility to divers and fishermen. Topographical maps were obtained.

(c) Jamaica

No supporting water quality data for the monitoring sites have been identified.

Archiving Data

Following discussions with Dr Jacob Opadeyi concerning the nature of the data collected and stored a system of naming and filing was developed and instituted. The following is stored at the Center for Marine Science (CMS) Caribbean Coastal Data Centre:

- Discovery Bay, 1999 (5 tapes)
- Sea Viking, The Bahamas, 1999 (1 CD)
- Port Royal, 2000 (2 tapes)
- Glovers Reef, Belize, 2000 (3 tapes)

Quality Assurance/Quality Control (QA/QC)

QA/QC is being developed for the monitoring programme based on reviews of the videotapes and the updated Video Methods Protocol.

Component 5 Assessment Missions and Site Visits

The Data Analyst, Ms Marcia Creary, accompanied members of Component 3 to the Bahamas and Belize. During her visit she accomplished the following:

- Met with representatives of Component 5 lead agencies in The Bahamas (The Bahamas Environmental Science and Technology Commission, Fisheries Department (FD), DEHS) and Belize (CZMA/I, FD, Land Information System) and reviewed the progress of the coral reef monitoring programme.
- Reviewed the available coral reef monitoring data and determined compliance with the video monitoring protocol.
- Assessed the capacity for the participating institutions to monitor, process and analyze data.
- Reviewed plans for completion of monitoring for the year 2000.

- Conducted orientation dives on the Sea Viking site, New Providence, Bahamas.

The Data Analyst conducted orientation dives at the three locations in Jamaica (Monkey Island, Portland; Southeast Cay, Port Royal; and West Fore Reef, Discovery Bay), and one location in the Bahamas.

Component 6: Coastal Vulnerability and Risk Assessment

Collection of Information

Stage II of the methodology has been completed, with an analysis of the technical and human resources required for component implementation in each country.

(a) Guyana

The Environmental Protection Agency (EPA) was contracted to coordinate and implement the component under an MOU signed between the OAS and EPA. Work has progressed successfully. A socio-economic survey was completed. In addition digitizing for the pilot areas is underway. Terms of reference for consultants for specific areas such as hydrology have been drafted and the selection process for these consultants is underway.

(b) Grenada

A consulting firm was selected to act as national coordinator for implementation of the component. Digitizing is progressing on schedule. There is some additional data, which needs to be acquired to complete the digitizing. Beach erosion analysis has been initiated in two of the pilot sites and an socio-economic analysis has been undertaken. Analysis of relevant legislation has also been initiated. With regards to hydrology a technical assessment of the location of groundwater resources and the demand for water has been completed.

(c) Barbados

Mr. Rawleston Moore was hired to implement component 6 in Barbados as well as provide some technical support in other areas. Consultants have been identified and are scheduled to begin work during the month of July. Analysis is underway with regards to beach erosion and recalculations with regards to the 1:100 year flood line.

Component 7: Economic Valuation of Coastal and Marine Resources

The Component will specifically assist participating countries to apply the tools of resource valuation, environmental accounting and environmental decision-making for use in the development of policy frameworks and economic and regulatory approaches within the context of the coastal and marine resources and CPACC objectives.

Phase I:

(a) Methodology Definition

The following tasks were achieved:

- Report on suitable economic valuation methodologies for the region;
- Selection and assessment of pilot study sites;
- Training of pilot country teams and others in the region on Economic Valuation and associated techniques; and

- A methodology of the implementation of three pilot studies in Dominica, St. Lucia and Trinidad and Tobago.

Despite some delays early in the year as the RPIU addressed a recommendation emanating from the RPIU to combine C7 and C8 activities into one large program, the component is now well into its first year of implementation and progress has steadily been achieved. Since January 2000, the project has entered Phase II, *Implementation of the Pilot Study*. During that period, the following has been accomplished:

(b) Finalization of Methodology

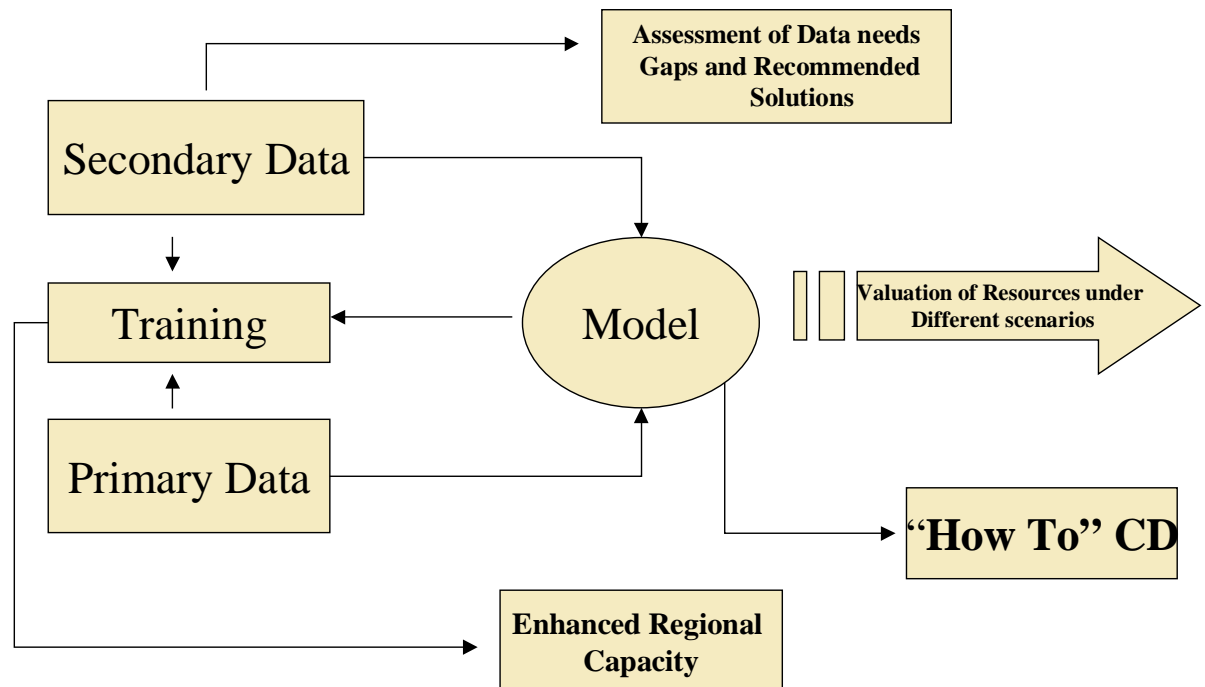
The methodology developed in October 1999 has been used as the guiding framework for the further implementation of the pilot study in the three (3) countries. As a follow-up to the first series of country visits and consultations at the local level, the consultants had devised an operational methodology for Component 7 describing pilot area designations and the proposed methodologies. Through recent discussions and country visits these have now been refined and finalized. A final draft version of this document describing the process to be undertaken and the methodologies to be used is being circulated and reviewed before publication.

(c) Final Pilot Areas Selected:

- St. Lucia. The vicinity of Vigie to Pigeon Island encompassing Rat Island and the Union River has been selected as the final pilot site. This site represents a heavily concentric tourism area with new development proposed as well as bisected by a river sourced from other rivers and water-bodies further upland.
- Trinidad and Tobago: The selected site stretches from Point Lisas in the South to Waterloo in the North on the southwest to northwest coast of Trinidad. The site was selected given that it represented largely the features described above and is also an industrial estate bordered by residential and fishing activity. There are also natural ecosystems such as mangroves and wetlands in the area. The area also consists of a number of cultural and religious sites.
- Dominica. Due to the impacts of hurricane Lenny on this tourism-based and community-based area, the stretch from Roseau to Scots Head was chosen. It is hoped that estimates of the damage to the area in terms of economic activity can also be measured.

A matrix has been developed out of the process to clearly define the issues and the methodologies to be used to evaluate resource value changes. The template was actually designed by the Component Team in Trinidad and has been used as a model for the other countries. Out of the country visits carried out in May of this year, the issues to be assessed and the techniques to be used have been decided upon and data collection has begun.

The implementation process being undertaken is reflected in the flow chart below:



Data Collection

Data collection efforts will be divided into two (2) aspects: **primary and secondary data collection**. Primary data collection needs were first only identified for St. Lucia but upon further discussion a survey will also be needed in Dominica to assess visitor use in the terrestrial and marine park areas, which form part of the pilot area. Data requirement sheets have been completed for each country and will be used as the basis primarily for secondary data collection.

Through discussions, a few potential scenarios have been highlighted which will be used to guide the valuation of the resources. These are still to be defined.

Primary data collection instruments have been designed and were reviewed and finalized during the country visits as well. Finalisation of the instruments and arrangements for their implementation at the local level are ongoing.

A secondary data process is on its way in all countries through our local counterparts. A country team has now mainly been formalized in each of the pilot countries although there is still scope to expand its membership.

Some preliminary data has been collected particularly fisheries information in St. Lucia and efforts are ongoing to move this process forward. Contact has also been made with various agencies from which information will be needed to facilitate this particular element. The process is a slow one but it is hoped that most of the data collection will be finalized by the middle to end of September 2000.

Harmonization of efforts with Component 3

Component 3 has been brought into the data collection exercise to ensure that our puts are compatible with the Coastal Resource Inventory and also to assess what data they

may be able to provide to the Component. An exchange of information on ongoing developments is expected to be maintained throughout the implementation process.

Further, work has been ongoing with the Component 3 consultants and coordinators to determine remote-sensing needs for three participating countries. Maps have been submitted from the countries determining the scope and area of the respective pilot sites

It is anticipated that the data produced from Component 7 will be included in the Coastal Resources Inventory System to emanate from Component 3.

Coordination

Coordination efforts in each country have been facilitated through the establishment of National Component Teams with specific team leaders. Dominica has requested assistance in the designation of a specific person to coordinate their participation in the Project and arrangements are being made to get this person on board as soon as possible.

St. Lucia submitted a proposal for the establishment of a virtual office, which, it is hoped, will be a sub-regional and regional node in terms of economic valuation. The RPIU is supporting this effort and hopes that similar such nodes will be established throughout the region. This will also allow the Component Team to follow and duplicate, in a real-time scenario, the techniques being employed by the International consultants.

Training

During the recent country visits, Component Team members were trained in primary data collection including needs assessment and sample size determination. This enhanced training received in December of last year during a five (5) day workshop held in Trinidad and Tobago, which was a comprehensive training exercise in economic valuation techniques, model assessment and implementation. Participants of the workshop were also exposed to the statistical package, which will be used by the consultants.

On a general basis, information on valuation work in similar as well as other areas is passed on to the Component Teams. In an effort to foster discussion and debate on economic valuation an *e-group* has been established under the management of the RPIU.

The joint workshop proposed for May 2000 has been postponed till August 28th – September 1 2000 in St. Kitts and Nevis. It remains a joint activity with Component 8 and will serve not only to bring the two groups together but also to foster a closer relationship between the five countries in a framework for policy analysis and implementation.

Component 8: Formulation of Economic/Regulatory Proposals

The general progress of implementation of the component has been satisfactory despite the delay experienced in conducting the first exploratory country visit in November last year. In addition, the RPIU and the consultants explored the possibility of combining C7 and C8 activities into one large program. Since the end of May of this year, the project has begun to address Task II: *Implementation of Pilot Studies*. Specifically, during this period, implementation has focused on the formulation of instruments and the finalization of a methodology. These have been critical steps in the process towards defining a pilot implementation strategy.

(a) Formulation of Instruments

The RPIU and US NOAA finalized the outstanding country visit, which had been delayed due to Hurricane Lenny in November 1999 and finalized preliminary discussions on Component 8 and its execution in St. Kitts and Nevis. The proposal to identify local consultant was tabled at the time to be further determined through continued discussions. These were finally identified in February/ March 2000.

Each country has identified two person teams – from different agencies. In Antigua and Barbuda, the Ministry of Finance and the Development Control Authority make up the Coordinating team and in St. Kitts and Nevis the Ministry of the Environment and the Ministry of Tourism comprise the team.

The Terms of Reference for the Project Local Consultants have been finalized and in fact the teams have been operating fully since March 2000.

The operation of the Project Local Teams has been quite successful. The teams have been operating well within the implementing schedule and maintained a cohesive group of participants in the Component Team. The Component Teams that have been coordinating efforts at the local level are cross-sectoral and have been committed to both the project and its long-term possibilities.

As part of the process towards identifying potential issues to be addressed at the national level and potential instruments, one day consultations were held in April 2000 in which the RPIU and NOAA participated and acted as co-facilitators. The meetings were well attended and discussions proved extremely fruitful. The meetings also resulted in a preliminary training session on economic instruments and their different applications. Specifically the consultations resulted in:

- The identification of members for the country coordination team;
- The identification of resources at risk and the prioritization of these resources; and
- Discussions on the potential scope of the pilot implementation strategy.

(b) Issue Identification

In Antigua and Barbuda, **sand** was identified as the priority resource at risk. Sand was identified as a significant resource in terms of a mineral, a purifier of water, essential for nourishment of beaches, an element for maintenance of the coastal and marine environment.

In St. Kitts and Nevis the priority resource identified was “beaches”. Along similar lines as the Antigua group, the role of beaches in protecting the coastline, in providing a natural environment for both residents and tourist were identified. It should be noted that there is active participation of officials from both St. Kitts and Nevis.

As part of the process, a matrix was developed by NOAA and has been utilized for an assessment of the identified priority issues as well as identifying potential instruments, which can be piloted.

Further discussions have been held with participants of the consultations who now form a coordinating team to further prioritize issues and develop a pilot implementation strategy. A strategy has now been identified for each country. Included in the strategy is a process for building awareness and seeking political endorsement of the process.

Methodology Finalization

The consultants have submitted two review documents, which will act as guiding documents to the pilot implementation process, namely,

- (i) Review of Economic Instruments for Environmental Goals; and
- (ii) Review of Legal and Institutional Mechanisms for Coastal Zone Management.

These are presently being reviewed internally but should be formally presented at the upcoming sub-regional workshop.

(c) Training and Capacity-Building

As part of the ongoing process, training and capacity building in this area is incorporated into daily activities. Further local and sub-regional workshops and consultations will be held as fora for further training. The workshop proposed for May this year has been postponed to August as it was felt that further work need to be completed in terms of developing a pilot strategy and building local consensus. The workshop is presently being organized

The regional workshop will also widen the consultation process to other countries and also ensure training at both national and regional levels.

(d) Outputs:

Despite delays in the execution of some activities and the usual delays in a consultative process, a number of outputs have been achieved in this period. In some cases, a specific effort has been made to include important agencies and sectors, which has extended the process, in some areas.

In order to ensure an adequate pilot implementation process, the pilot phase has been extended to the end of the year. It is felt that the project needs at least six months to achieve material results and to develop a process, which can be maintained and further fostered by the national government.

Achieved outputs include:

- (i) Identification of priority issues and resources at risk;
- (ii) Development of a Matrix of Resource and Issues for each country;
- (iii) Establishment of country coordinating teams;
- (iv) Pilot Implementation Strategies for Antigua and Barbuda (St. Kitts and Nevis are working to finalize their strategy); and
- (v) Review reports on Economic Instruments and Legal and Institutional Mechanisms.

Component 9: Greenhouse Gases Inventory/Agriculture and Water Resources Vulnerability Assessment

The report is still pending full clearance from the government of St. Vincent and the Grenadines. The final draft was discussed during a public national stakeholder meeting held on March 21, 2000. Feedback from the meeting was incorporated in the present version of the report.

The workshop, held at the Chamber of Commerce Building in Kingstown, St. Vincent, was opened by the Minister of Health and Environment and the Permanent Secretary. About 30 people participated. A draft of the report was circulated. The workshop included presentations on the Greenhouse Gases (GHG) inventory, vulnerability assessment and policy framework. Following the presentations the floor was then opened for discussion. Particular attention was given to vulnerabilities and to the policy options. Mitigation and adaptation options were discussed as well as anticipated implementation problems. Participants explained that some of the problems encountered in this type of project include lack of enforcement of existing regulations. In terms of immediate and long term vulnerabilities, several participants stressed the need for strong land use controls as key to more sustainable development patterns.

Annexes

ANNEX 1: World Bank Supervision Mission Report

ANNEX 2: Water Level Observation Network for Central America (RONMAC)

ANNEX 3: CPACC Regional Media Consultation

ANNEX 4: CPACC Private Sector Seminar

ANNEX 5: Brainstorming Session on the future of CPACC

ANNEX 6: Decision made at the Eighth Meeting of the Council for Trade and Economic Development (COTED)

ANNEX 7: Data Collection and Automation in GIS Workshop (March 20-25, 2000)

ANNEX 8: Sea Level & Climate Monitoring Network Replacement Fund – Minutes from the First Meeting of the Fund Oversight Committee, March 31, 2000.

ANNEX 9: Report from the 20th ESRI Users Conference

World Bank Supervision Mission

This was the fourth World Bank supervision mission since CPACC's effectiveness. An aide memoire was prepared and is enclosed for more information. The main objectives of the World Bank mission were to review progress to date on project implementation, review financial management arrangements, and discuss possible follow-up activities. The Bank commended the OAS and the RPIU staff for their dedication to the project.

Project **overall implementation performance** was rated satisfactory. The Bank noted that all project components are under execution, albeit with some delays. These delays have caused a bunching of project implementation activities towards the end of the project, which may create some problems. For the remainder of the project, there will be a need to increase the pace of execution and consequently the rate of disbursements. All major participants in project implementation, namely OAS/USDE and RPIU, will be required to optimize staff time by setting distinct priorities and deploying the maximum manpower to the field in support of the implementation of the different components.

Major assessment points brought up by the World Bank and required actions by OAS/USDE and RPIU include:

- The project continues to strengthen the Caribbean region's capability in preparing to cope with the adverse effects of climate change.
- Capacity building activities have contributed to enhancing the technical expertise of professionals and sensitization of policy makers about climate change impacts.
- CPACC continues to expand its role as a focal point for supporting efforts to bring forward a sustainable development agenda for the region.
- One of the strengths of the OAS and RPIU management is their ability to network, especially in international arenas. The Bank encouraged the management team to allocate significant time in the coming year to meet with potential donors and to identify future sources of financing to sustain CPACC.
- A key concern at this stage of implementation is the need to increase the pace of disbursement to about \$1.5 million a year for the remainder of the project. One of the main problems to accomplish this is available cash flow. The Bank will explore the possibility of lowering the threshold of direct payment to \$50,000 (from \$100K) and reduce the amount for withdrawal applications to \$50,000 (also from \$100K). The OAS will convene a planning session on or about April 20 to prepare a new budget and disbursement plan to achieve this target.
- The overall assessment of the project's financial management was found satisfactory.
- The RPIU will complete a desktop review of NICUs performance by April 21, 2000.
- The RPIU will liaise with the three consultants who are coordinating the national communications in the region, through UWICED, to ensure that the reports internalize all CPACC supported developments.
- A teleconference between OAS, RPIU and World Bank is tentatively scheduled for April 27, 2000 to review follow-up actions from the mission.
- The Project Advisory Committee (PAC) and NFPs meetings will take place on July 17-21, 2000 in Guyana.
- The next World Bank supervision mission is scheduled for September 2000.
- The final CPACC conference will be held in September 2001.

Water Level Observation Network for Central America (RONMAC)

Background

In October 1998, Hurricane Mitch, the fourth most intense Atlantic Ocean hurricane on record, battered Central America, resulting in damage estimated in the range of US\$7.5 to US\$8.5 billion for the region. Studies indicate that extreme events such as Hurricane Mitch are common in Central America and are expected to increase in both frequency and severity. Accordingly, a strong commitment is being made by regional governments and donor agencies to strengthen infrastructure and capacity in order to address these issues. The RONMAC project has been devised by the U.S. Government in direct response to the impact of Hurricane Mitch on four Central American countries: El Salvador, Guatemala, Honduras, and Nicaragua.

Participating Agencies

- United States Agency for International Development (USAID), Funding Agency
- Center for Operational Oceanographic Products and Services, National Oceanic and Atmospheric Administration (CO-OPS/NOAA), of the US Department of Commerce, as Adminstrating Agency
- Unit for Sustainable Development and Environment of the Organization of American States (OAS/USDE), as Executing Agency
- Regional Committee for Water Resources (CRRH), as Regional Coordinating Agency
- National agencies in El Salvador, Guatemala, Honduras, and Nicaragua, as direct counterparts and beneficiaries of the RONMAC project

Objective

To provide support for the development and improvement of the geodetic framework of Central America with direct benefits to coastal resources management, coastal hazard mitigation and emergency planning, design and development of coastal infrastructure and harbor facilities, and coastal navigation.

Time Frame

The RONMAC Project is being executed from June 2000 to December 31, 2001. RONMAC will continue after the official participation of the OAS/USDE and CO-OPS/NOAA has ended, thanks to significant country buy-in and capacity-building activities. CRRH's role as the Regional Coordinating Agency will continue after the Project officially ends.

Activities

- (vi) Install six state-of-the-art sea-level and meteorological monitoring stations in El Salvador, Guatemala, Honduras, and Nicaragua;
- (vii) Install ground station and facilitate real-time access to and distribution of information;
- (viii) Recover historical MSL data and update the local MSL data at these stations to support the development of a geodetic framework for Central America;
- (ix) Develop a national and regional capacity to install and maintain the stations and to conduct data acquisition, analysis, archiving and dissemination using automated data-base management technology; and
- (x) Strengthen professional and technical skills of host-country agencies and national and regional institutions through technology transfer and capacity building.

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CPACC Regional Media Consultation

27-28 April 2000

Venue: To be determined by host NICU

Agenda

Day 1: Thursday 27 April 2000

07:45-08:25 Registration

Opening Ceremony

Chair: Dr. David McIntosh

Chief Executive Officer, EMA

08:30	Welcome	Chairman
08:40	Overview of Seminar	Dr. U O'D Trotz Project Manager, CPACC
08:50	Feature Address	Hon. Reza Mohamed Minister of Environment
09:10	Vote of Thanks	Kishan Kumarsingh EMA; CPACC National Focal Point in Trinidad and Tobago
09:10	Coffee Break	
09:40	Minister of Environment leaves	

Day 1: Thursday 27 April 2000 continued

Session 1

Chair: Carlton James

CPACC

Rapporteur: Judi Clarke

09:45	Disaster Preparedness and Prevention in the context of Climate Change	Jan Vermieren OAS
10:00	Discussion	
10:15	Climate Change and the Caribbean: Impacts and Opportunities	Dr. Neville Trotz Project Manager, CPACC
10:30	Discussion	
10:45	The Coastal Zone: Planning for Adaptation To Climate Change	Dr. Leonard Nurse Director, Coastal Zone Management Barbados
11:00	Discussion	
11:15	Sea-level/Climate Monitoring	Shelley Ann Jules-Moore, IMA
11:30	Discussion	
11:45	Challenges to Project Implementation	Dr. Neville Trotz
12:00	Discussion	
12:15	End of Session	
12:30	LUNCH	
13:15	Lunch-time Presentation The Media and Sustainable Development in the Caribbean	Hugh Cholmondeley Consultant, Communication and Development

13:30 Discussion
13:45 Break

Session 2

14:00 Country-level Activities: NICUs Kishan Kumarsingh
CPACC NFP, Trinidad and Tobago

14:15 Discussion

14:30 Establishment of databases and Information Systems Ian King
Information Systems Coordinator
CPACC, RPIU

14:45 Discussion

15:00 CPACC: Challenges to Project Implementation Dr. Neville Trotz

15:15 Discussion

15:30 The Mass Media: in Adaptation to Climate Change Hutton Archer
Senior External Relations Officer
Global Environment Fund.

15:45 Discussion

16:00 The CPACC Public Awareness Strategy; An overview Carlton James
CPACC

16:15 Discussion

16:30 End of Session 2

18:30 Reception

Day 2: Friday 28 April 2000

Session 3

08:00- 13:00 FIELD VISIT
To be arranged by Planning Committee

13:30 Lunch

Session 4

Chair: Carlton James
(Rapporteur: Leisa Perch)

15:00 Dissemination: Regional Media Services Representative, CANA/CBU
(CMC)

15:15 Discussion

15:30 Climate Change and Public Awareness Panel of Media Participants
from a Media Perspective

16:00 Discussion: "The Way Forward"

16:30 Closing Notes Dr. U.O'D. Trotz
Project Manager, CPACC

16:45 End of Session 4

CPACC PRIVATE SECTOR SEMINAR

15-16 May 2000
 PETROTRIN Complex,
 Point-a-Pierre, Trinidad

Agenda

Private sector seminar

Monday 15 May

07:45-08:15 registration

Opening ceremony

Chair: Kelvin Ramnath. PETROTRIN

08:30	Welcome and Opening Remarks	the Honourable Finbar Gangar, Minister of Energy of Energy Industries, Trinidad and Tobago.
08:40	Overview of Seminar	Neville Trotz Project Manager, CPACC-RPIU
08:50	Feature Address	Dr. the Honourable Reeza Mohammed Minister of Environment, Trinidad & Tobago
09:05	Vote of Thanks	Kelvin Ramnath, Chairman

Session 1

Climate Change (general)

Chairman: Carlton James

09:10	Announcements	
09:15	Climate Change and the Caribbean	Neville Trotz Project Manager, CPACC-RPIU
09:45	New Opportunities for Investment in the Caribbean: The Clean Development Mechanism (CDM)	Doug Russell (GCSI)
10:05	Break	
10:30	CDM and the Central American Experience	Christiana Figueres Executive Director, Center for Sustainable Development in the Americas
10:50	CPACC: Charting a New Course	Walter Vergara, The World Bank
11:05	The Carbon Fund	Loretta Sprissler, The World Bank
11:20	General Discussion	Panel of Respondents: Trotz/Russell/Figueres/Sprissler, Vergara
13:00	Lunch	

Session 2

Insurance/Banking

Chairman: Jan Vermeiren

- 14:00 Panel: Climate Change and the Insurance Industry
Presentations of 10'00" each
 Mark Baker, Insurance Institute of Canada
 Jean-Michel Attlan, International Financial Corporation
 Doug Russell, Global Climate Solutions Inc. (GCSI)
- 14:45 Discussion
- 15:30 Panel: Private Sector Roles
Presentations of 10'00" each
 Financing Mitigation and Adaptation, Michael Sanio, GEF
 Climate Change Adaptation and Private Sector Partnership, Christie Jorge, Pew Ctr.
 Climate Change Implications for the Caribbean Financial Sector, Hilford Murrell
- 16:40 Discussion
- 17:00 End of Session 2
- 18:30 Reception

Tuesday 16 May

Session 3

Petroleum, Agriculture, Policy
 Chairman: Kelvin Ramnath

- 08:30 Panel: Petroleum, Agriculture, and Policy
Presentations of 10'00" each
- | | |
|---|--|
| Caribbean Response Initiatives in the Petroleum Industry: | Kelvin Ramnath/Valerie Quan Vie, PETROTRIN |
| Multinational Initiatives in the Petroleum Industry | Doug Russell, GCSI |
| Policy of Climate Change: a European Perspective | Stephen Singer
European Climate and Energy Policy Unit, |
| WWF | |
| Climate Change and Agriculture | Peter Sparks, Clemson University |
- 10:45 Break
- 11:00 Discussion
- 12:15 LUNCH
- 13:15 Visit to Pointe-a-Pierre Wild Fowl Trust

Session 4

Chairman: Carlton James

- 15:00 Views of the Regional Private Sector Interactive Plenary Session
(General discussions, recommendations comments)
- 16:00 Climate Change: Understanding Speaker Paul Keens-Douglas, Motivational
 Caribbean People; Telling the Story
- 16:30 Closing Remarks Wayne Usher, CPACC National Focal Point, Belize
- Terrance Smith, Grenada
 Bismarck Coakley, Bahamas
 Dev Sharma, Georgetown Chamber of Commerce, Guyana
 Hilford Murrell, Intl. Banking Sector, Barbados

Michael Sanio, GEF
Cornelius Fevrier, CARICOM Secretariat
Jan Vermeiren, OAS
Leslie Walling, CPACC
Loretta Sprissler, World Bank
Kelvin Ramnath, PETROTRIN

17:05 End of Seminar

Brainstorming Session on the future of CPACC

Accra Beach Hotel
March 30, 2000

Participants:

John Wilson, Barbados;
Mustafa Toure, Belize;
Colin Depradine, Caribbean Institute for Meteorology and Hydrology, Barbados;
Cornelius Fevrier, CARICOM Secretariat;
Jeremy Cullymore, Caribbean Disaster Emergency Response Agency, Barbados;
Lee Chapin, CPACC/Organization of American States;
Claudio Volonte, CPACC/ Organization of American States;
Jan Vermeiren, CPACC/ Organization of American States;
Ian King, CPACC/Regional Project Implementation Unit;
Neville Trotz, CPACC/ Regional Project Implementation Unit;
Rawleston Moore, CPACC/ Regional Project Implementation Unit;
Rashleigh Jackson, Guyana;
Shelly-Ann Jules-Moore, Institute of Marine Affairs, Trinidad and Tobago;
Kelvin Ramnath, Petrotrin, Trinidad and Tobago;
Leo Moseley, University of the West Indies – Cave Hill;
Oliver Headley, University of the West Indies – Cave Hill;
Loretta Sprissler, World Bank
Kirsten Oleson, World Bank;
Walter Vergara, World Bank;
Rajeev Swami, World Bank.

Issues to be considered by **Brainstorm Session**:

- Outputs that Centre can address;
- Strategic linkages that need to be developed;
- Strategies to ensure necessary political support; and
- Tasks to be undertaken to move from concept to reality.

Introduction (Walter Vergara, the World Bank.)

- The group needed to be aware of the fact that CPACC, though of short duration, is dealing with long-term phenomena.
- As such the region needs to develop sustainable mechanisms, which will enable them to deal with the problems of adaptation to Global Climate Change (GCC).
- CPACC follow-up should be driven by technical, scientific and operational considerations and should support the development of sustainable institutional and policy frameworks to support regional responses to GCC.
- GEF will not support the CPACC follow-up in its entirety as in the present case so the group will need to embark on an exercise to identify potential partners and alternative funding activities. This will require an investment in time and resources on the part of the RPIU and its strategic partners.
- CPACC follow-up activities must be driven by local climate change agenda involving the various stake holders and sectoral interest groups. This will provide the foundation for political support.

- At this time, the priority of CPACC is to ensure that delivery of all its outputs and components. The successful and complete implementation of CPACC is a *sine qua non* for any further support for climate change works in the region.
- On the question of funding there were preliminary indications that the GEF will be amenable to providing some support. Possible support to the Center could be from the Canadians, Scandinavians and Europeans need to be explored, CDM certification process and adaptation funds, consulting services, Institutional Development Fund (IDF/World Bank). The World Bank has developed a Carbon Fund, which can support mitigation activities in the region (renewable energy). The short-term goal should be to secure a PDF grant from the GEF.
- Time lag between the end of the CPACC Project (December 2001) and the start up of its follow-up activity should be minimized.

Progress Report in the development of the Climate Change Center (Neville Trotz, CPACC/RPIU)

At the 1st Ministerial Meeting to consider the implementation of the SIDS POA in 1997, Ministers recorded their support for CPACC and mandated that Caribbean States develop the necessary institutional mechanisms to ensure that critical programmes initiated under CPACC are sustainable beyond the lifetime of the project.

Consultations in late 1999 with CERMES, UWI Faculty of Natural Sciences, CIMH, PETROTRIN led to the proposal for the establishment of a regional Climate Change Centre with the following objectives:

- Collect and disseminate climate change baseline data and to serve as an authoritative source in international negotiation of agreements on Climate Change issues;
- Advise ACS, CARICOM governments and the private sector on climate change and related issues;
- Develop special programmes targeting key issues such as coastal zone management and hurricane preparedness and sectors such as Tourism, Agriculture, Health, Insurance, and the Oil and Petrochemical Industries;
- Assist member countries in the preparation and implementation of future Clean Development Mechanism Projects;
- Fulfill the need of a regional certification entity s envisioned under the Kyoto Protocol;
- Assist in resource-sharing and technical co-operation and to provide information exchange on training, both regionally and elsewhere throughout the world;
- Link with other SIDS initiatives e.g. in the Pacific and Indian Oceans.
- Facilitate direct meeting of Small Island Developing States (SIDS) representatives before Conference of Parties meetings, to define common strategy and goals and to advocate for SIDS at international fora;
- Serve as a focus for visiting scientists working on climate change related research and for the organization of Workshops, Seminars, Lectures and other outreach activities aimed at increasing public awareness of the problems associated with Climate Change.

Political endorsement has been given at the level of the CARICOM Council of Ministers responsible for Trade and Economic Development (COTED). COTED has recommended that the proposal be put to the next meeting of CARICOM for their approval. Further endorsement was secured at the 8th meeting of Ministers of Environment of Latin America and the Caribbean held in Barbados in March 2000.

Offers to host the CCC have been made by the Government of Barbados (through the Minister responsible for Energy and Environment) and Trinidad and Tobago (through the

Minister responsible for Environment) and PETROTRIN (Trinidad and Tobago oil company).

A concept paper on the CCC was prepared originally by UWICED but has been adapted and amended to reflect inputs from the network. The adjusted concept paper was available for the present discussion.

Regional Mechanism – Center for Sustainable Development

In the subsequent discussion the major issue that emerged concerned the development of a regional mechanism (not unlike SPREP) to address the implementation of the regional sustainable development agenda (essentially the SIDS POA). In this respect there is another concept paper in circulation that addresses the establishment of a regional Center for Sustainable Development. The region was pursuing several projects under the sustainable development umbrella – land degradation, water management, and renewable energy – and it was felt that such a centre would adequately address the problem of coordination and regional capacity building.

The proposers of the Sustainable Development Centre have now embarked on a process of regional consultation. There is a request to place this proposal on the agenda of a meeting of regional Ministers of Environment and Finance supported by UWICED (if CARICOM can arrange). This will be followed by presentation of the proposal to Heads of Government.

It was felt that the concept of the Sustainable Development Center was not inconsistent with the establishment of the CCC but it is essential however that CPACC proceeds with the development and establishment of CCC. The CCC will be within the context of the institutional mechanism to implement CPACC follow-up.

Climate Change Center and other regional institutions

Another issue concerned the envisaged relationship between the Climate Change Centre and institutions such as CIMH and CDERA. It was emphasized that the CCC will facilitate capacity strengthening in areas relevant to climate change in existing institutions that already contribute to climate work in the region. There is no intention for the CCC to absorb functions already performed by other institutions. However the CCC will certainly be filling “gaps” in the regional capacity to address climate change impacts and as a coordinating and initiation center for climate change activities in the region.

The Barbados participant supported the idea of the sustainable development center and indicated that problems may arise for the CCC if the proposal for its establishment had financial implications for Governments. In this respect it was pointed out that the level of input expected from Governments should be the commitment of resources in kind – personnel and institutional support.

Political Process and Support

On the question of presenting the CCC proposal to Heads, M. Toure observed that before this occurs some interaction should take place with the Prime Minister of Belize who is now the Community’s spokesperson on environmental matters. Toure also expressed the need to see the CCC proposal as part of a wider portfolio addressing other cross cutting regional environmental issues under the climate change agenda.

Jan Vermeiren suggested that a strategic decision be made for the next four years not to ask governments for financial support for CPACC follow-up and that we explore to the fullest all opportunities for international funding. He also suggested that in development of the CCC proposal attention be paid to placing it within a regional context vis-à-vis the institutional mechanisms currently in place or anticipated to address the sustainable development agenda.

Kevin Ramnath reiterated PETROTRIN's and the Government's of Trinidad and Tobago support for the CCC initiative.

The reality of the present situation is that the CCC concept has been widely discussed in the region and has proceeded with gaining approval at the political level. Given that the timeframe for the completion of CPACC any delay in finalizing the proposal for the establishment of the centre can compromise the efforts needed to develop it as the regional institutional mechanism for the implementation of CPACC follow-up.

Functions of the Center

The session then considered the functions of the proposed Centre:

- Collect, analyse and disseminate meteorological and sea level data relevant to the observation of climate change, and facilitate, in collaboration with specialized Caribbean agencies, studies about the impact of climate change on the sectors in the Caribbean.
- Facilitate Caribbean positions on GCC and serve as an authoritative technical source for Caribbean countries to inter alia fulfill their responsibilities under the UNFCCC.
- Assist countries as appropriate in realizing the equitable benefits resulting from the implementation of financial mechanisms under the Kyoto Protocol.
- Provide strategic assistance for public education and awareness campaigns at the national and regional levels to involve all regular stakeholders, both private and public.
- In collaboration with relevant agencies, develop special programs addressing GCC implications in the region for CZM, Disaster Management, and potentially vulnerable sectors such as Tourism, Health, Agriculture and Insurance.
- Promote resource sharing, technical cooperation and information exchange with other GCC initiatives, in particular in SIDS and Latin America.
- Coordinate the development of regional research programmes, including adaptation of global modeling efforts, and specialized training focused on effective adaptation to GCC.

CPACC Follow-up Objectives

The meeting also proposed the following for the CPACC follow up:

Implementing Adaptation to Climate Variability and Change in the Caribbean (IMPACC)

- Facilitate replication of CPACC pilot components regionally where appropriate.
- Support and coordinate the preparation of the 2nd National Communications.
- Identify and implement appropriate technical and financial response mechanisms for adaptation to GCC (Stage 2 adaptation of UNFCCC).
- Promote further research on CC impact assessment, including the application of regional climate modeling, in support of decision making at the regional level.
- Promote the realization of win-win opportunities in the region for adaptation to/mitigation of/GCC (including renewable energy, energy efficiency, technology transfer and watershed protection).

- Assist countries in incorporating climate variability and change considerations into their development planning process, in particular linking natural hazards risk assessment to CC vulnerability.

Next Steps

The group agreed that the next steps should include:

- Complete Climate Change Center concept paper (July 2000)
- Receive endorsement from CARICOM Heads of State (July 2000)
- Prepare concept paper for GEF Block B to prepare CPACC follow-up (IMPACC) and establish Climate Change Center (September 2000)
- Prepare GEF Block B (October – December 2000)
- Implementation of Block B (January – December 2001)
- Establishment of the Climate Change Center: October 2001.
- IMPACC project document (October 2001)
- IMPACC implementation (January 2002 – December 2005). The Climate Change Center will become the executing agency of the IMPACC project.

Decision made at the Eighth Meeting of the Council for Trade and Economic Development (COTED)

Caribbean Community Secretariat Bank of
Guyana Building
P.O. Box 10827
Georgetown
Guyana

CARICOM
Your Ref.
Our Ref.

25 May 2000

Dear Dr. Trotz,

The Council for Trade and Economic Development (COTED) is the policy- making body in the Caribbean Community responsible for issues relating to Sustainable Development, including the Environment.

The COTED, at its Eighth Meeting held in Guyana on 7-8 February 2000, in analysing and promoting the implementation of the UN Convention on Climate Change and the Kyoto Protocol:

"Further endorsed the present initiative to establish a regional Climate Change Centre;

Authorised the present implementation team for CPACC, viz. CARICOM, UWICED, OAS and the World Bank to submit a request to the GEF for a medium size grant for the development of a full proposal for the establishment of the Centre;

Urged Member States to encourage international donor agencies and the regional corporate sector to give their full support to the Region's efforts to establish the Centre;

Agreed to forward this initiative to the next Meeting of the Conference

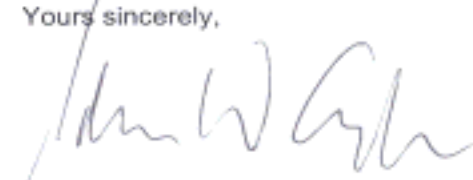
of Heads of Government for its endorsement'.

Dr. Uiric O'D. Trotz
Project Manager
Caribbean Planning for Adaptation to
Global Climate Change
West Indian Commission Building
Black Rock, St. Michael, BARBADOS

The COTED has, in its decision, agreed to forward the initiative to the Conference of Heads of Government for its endorsement also. The next Meeting of the Conference is scheduled for July 2000. The Secretariat will place the item on the Agenda of the next Meeting of the Community Council, which is the body which prepares the Agenda for Meetings of the Conference. In the interim, please note that endorsement of the COTED is endorsement of the Community.

Yours sincerely,

Yours sincerely,



EDWIN W. CARRINGTON
SECRETARY-GENERAL

Workshop on Data Collection

Sea Level & Climate Monitoring Network Replacement Fund

Minutes from the 1st Meeting of the Fund Oversight Committee, March 31, 2000
Accura Beach Hotel,
Barbados

Members Present:

CARICOM Secretariat - Cornelius Fevrier
CIMH - Colin Depradine
GS/OAS - Jan Vermeiren/Lee Chapin
CPACC/RPIU - Ulric O.D. Trotz
UWI - unable to attend

1. The meeting was called to order. The first order of business was the election of a chairman: the CARICOM Secretariat.
2. Travel cost for Committee members to attend future meetings. It was determined that as much as possible of the business of the Committee should be conducted via email. Future meetings should be scheduled to coincide with other meetings. Member organizations would be responsible for any travel costs. It was clearly stated that the Trust Fund would not be used for any travel.
3. Trust Fund Accounting. Dr. Depradine stated that a Trust Fund account had been opened at the CIBC Bank, but that the money had not yet arrived. Dr. Depradine explained that the account was not interest earning, Barbados banks do not allow business checking accounts to earn interest. It will be necessary to invest a portion of the Trust Fund in Certificates of Deposit (CD). The committee decided that the Trust Fund should be invested as follows:

50% of the funds in a 12-month CD, 25% in a 3 or 6 month CD, the remaining 25% should remain in the checking account. It was decided that the future earned interest should be rolled over into the renewed CD.
4. CARICOM inquired about the official naming of the CIMH that is referred to in the text of the Trust Fund MOU. Dr. Depradine explained that the MOU was executed prior to the official name change from CMI to CIMH.
5. Establishment of shipping accounts. Dr. Depradine said that CIMH had an existing Federal Express account. It was agreed that the existing FedEx account would be used. The question was raised as to whether the Trust Fund was intended to be used prior to the end of CPACC. It was decided that an inquiry should be made to OAS (Claudio Volonte) as to the availability of project funds for shipping and replacement prior to the end of the project. Mr. Chapin estimated that the shipping costs for the first annual sensor “swap” should be under \$4,000 (BD\$).
6. Trust Fund accounting. Dr. Depradine explained the CIMH auditing process that is performed by the Government of Barbados. He said that it was reliable, but not timely in its delivery. It was decided that the Trust Fund auditing would be done within the umbrella of the CIMH audit, due to the high cost of performing a separate audit. The accounting spreadsheet will be available as stated in the Trust Fund MOU, however,

the audit will be available when it is delivered to CIMH by the Government of Barbados auditors, and will be circulated to members of the committee.

7. Additional sources of Trust Fund revenues. Dr. Trotz explained that during a recent visit by officials from the Government of Finland they indicated that they had an interest in creating Trust Funds in the region. Drs. Trotz and Depradine will keep the committee apprised on the future progress in the discussions with the Government of Finland. Soliciting funds from private sector donations was discussed. Mr. Chapin explained the potential for funds from the private sector from the addition of voice system add-ons to the existing CPACC monitoring equipment. It was decided that any revenue derived from this source would be handled by the CPACC-RPIU and the individual NFP's. That a portion of the revenue would be returned to the National Meteorological Offices.
8. Hurricane/Tropical Storm damage to the monitoring sites. Dr. Depradine explained that the member state representatives at the recent CMO meeting (December, 1999) had decided that the member states did not agree to the establishment of the proposed "Hurricane replacement fund", but had suggested that each member should seek to insure its equipment. Mr. Chapin stated that U\$12,000 would be sufficient to replace the hardware for the expected "worst case" damage to a monitoring site. That if a U\$25,000 fund were available that it should be sufficient for a regional hurricane/tropical storm replacement fund. It was decided that Dr. Depradine would present this plan again with more cost information to the next CMO meeting.

Report on the 20th ESRI User Conference