Lessons learned

CARIBBEAN: PLANNING FOR ADAPTATION TO GLOBAL CLIMATE CHANGE (CPACC)

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Mainstreaming Climate Change Adaptation into the World Bank's Operational Work

Lessons Learned

From

Caribbean:
Planning for Adaptation to Global Climate Change
CPACC

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Climate Change in the Context of the Caribbean

The members of the Caribbean Community (CARICOM) are primarily small island states with fragile coastal ecosystems. Agriculture and tourism are their principal sources of employment and foreign exchange earnings. Coastal areas, holding the vast majority of the population and economic activity, are vital to the prosperity of these countries. Coastal areas are usually the most biologically productive areas, supporting a wealth of live marine resources and characterized by high biological diversity. In recent years, these resources have come under increasing stress: intensification of human population and activities; concentration of tourism-related infrastructure; inadequate disposal of liquid and solid wastes; decaying drainage infrastructure; severe weather events which have brought about record losses; and mismanagement of coral reefs, sea grass beds, mangroves, and wetlands. In addition, the lack of comprehensive information systems prevents the integrated management of those resources.

Anticipated global warming and consequent changes in sea level, sea surface temperature, and wind and ocean currents may seriously compound these problems. Sea level rise, in particular, would likely affect freshwater supply, increase beach and coastal erosion, increase permanent coastal inundation, and aggravate the impact of tropical storms. It also threatens the disproportionate share of industrial, tourism, energy, transport, and communications infrastructure concentrated in the coastal zone. The 1992 report of the Intergovernmental Panel on Climate Change (IPCC), recommended that small island developing countries undertake measures to reduce vulnerability to sea level rise through improved coastal zone management.

The Caribbean small island development states' panorama is further compounded by the SIDS paradigm: The size of their population and economic base is very small, with a limited human resources pool from which skilled resources must be drawn and with high economic vulnerability to natural hazards and economic fluctuations. Also, well-trained government officials have a plethora of activities to respond to, restraining their availability to address climate change issues, as these are perceived to affect the Caribbean islands only in the long term.

In addition to the region's high vulnerability to climate change and relative small population size, Caribbean SIDS were, and still are, characterized by (i) weak institutional capacity; (ii) limited environmental data; (iii) restricted long-term environmental planning and inadequate policies; (iv) political championing of climate change agenda at the regional and international levels with limited reach at the national level, and; (v) need to comply with UNFCCC responsibilities.

It was against this background that the CARICOM countries prepared for and participated in the 1994 UN Global Conference on Sustainable Development of Small Island Developing States (SIDS) in Barbados. Not surprisingly, the Program of Action that resulted from this conference listed Climate Change and Sea Level Rise as a priority area for action by SIDS. Following the conference, a number of CARICOM countries

requested assistance from the General Secretariat of the OAS in developing a project that would help them initiate adapting to the impacts of climate change.

At that time, eleven of the CARICOM countries were party to the United Nations Framework Convention on Climate Change (UNFCCC)[1]. The Convention established a legal framework for responding to global climate change through the promotion of measures aimed at mitigating emissions of Green House Gases (GHG) and preparing for adaptation to the adverse effects of climate change. Being small contributors to the production of GHG, but extremely vulnerable to the impact of climate change, the Caribbean SIDS were well-positioned to qualify for assistance from the Global Environment Facility (GEF) in the area of adaptation to the adverse effects of climate change.

When the initial project concept was being developed in the latter part of 1995, the GEF was prepared to fund what was called Stage I of Adaptation, consisting of "Planning, including studies of possible impacts of climate change to identify particularly vulnerable countries or regions and policy options for adaptation and appropriate capacity building". In the medium and long-term, two additional stages were envisaged for countries or regions identified in Stage I as being particularly vulnerable. Stage II: Measures included further capacity building, which may be taken to prepare for adaptation. Stage III identified measures to facilitate adaptation (e.g., insurance).

Project Preparation

The General Secretariat of the Organization of American States, GS/OAS, organized a regional technical consultation in Barbados in September 1994, with participation of several countries, the CARICOM Secretariat, and the Organization of East Caribbean States, OECS, Natural Resources Management Unit (OECS/NRMU). The various comments made at the Barbados meeting were incorporated into a revised project document which was subsequently submitted to all the member states of the GEF Caribbean Constituency for consideration and approval. The Council of CARICOM Ministers of Foreign Affairs endorsed the project and mandated that it should be transmitted to the GEF.

The GEF Council approved the project concept in May 1995, and the GS/OAS received a Project Development Facility (PDF) grant to prepare a full project document in consultation with the participating countries and regional institutions. The OAS prepared a basic project description document with information about climate change and how it could impact the people and economies of the region, with the background and proposed outline of a project, and the next steps in further detailing the project's activities and preparing the full project document. The OAS, with the collaboration of the World Bank as GEF implementing agency, organized a consultation process including regional

[1] Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, and Trinidad and Tobago.

meetings with government appointed National Focal Points(NFP), and national consultations in each of the participating countries. The main output of the national consultation process was the production of national reports defining the desired nature of the country's participation in the project. The regional consultation workshops guided the integration of the proposed national and regional activities into a coherent work plan; defined the final allocation of pilot projects among countries, and; addressed operational and funding aspects.

Once the appraisal was successfully concluded, the General Secretariat of the OAS as executing agency prepared a series of cooperation agreements that would govern the execution of the project. A first agreement was established with the University of the West Indies, governing the roles and responsibilities of respectively the GS/OAS, and the UWI Centre for Environment and Development (UWICED). This last institution was selected as the most appropriate one to host the project's Regional Project Implementation Unit (RPIU), the team that would directly manage the execution of the project in the field. Cooperative agreements were also established by the GS/OAS with each of the participating countries, which specified roles and responsibilities of the GS/OAS, the RPIU and the country's institutions in the implementation of the project's activities.

The CPACC Design Structure

The overall objective of the CPACC, was to support 11 Caribbean countries[2] in preparing to cope with the adverse effects of Global Climate Change, particularly sea level rise(SLR), in coastal and marine areas, through vulnerability assessment, adaptation planning and related capacity building initiatives. More specifically, the project was expected to assist national governments and UWICED to:

(i) strengthen the regional capacity for monitoring and analyzing climate and sea-level dynamics and trends;
(ii) identify areas particularly vulnerable to the adverse effects of climate change and SLR;
(iii) develop an integrated management and planning framework for cost effective response and adaptation to the impacts of GCC on coastal and marine areas;
(iv) enhance regional and national capabilities to prepare for the advent of GCC through institutional strengthening and human resource development; and
(v) identify and assess policy options and instruments that may help to initiate the implementation of a long-term program of adaptation to GCC, in vulnerable coastal areas.

[2] The participating countries were: St. Lucia; Barbados; Bahamas; Dominica; Antigua and Barbuda; St. Kitts and Nevis; St. Vincent and the Grenadines; Grenada; Jamaica; Trinidad and Tobago; Guyana; and Belize.

CPACC was designed for implementation as a regional project. Its implementation modalities emphasized a decentralized and cooperative network approach - along with the 11 participating countries - to build the requisite human and institutional capacity at the national level. The project comprised four (4) regional and five (5) pilot action components.

The regional components were:

1. Design and Establishment of a Sea Level/Climate Monitoring Network
2. Establishment of databases and information systems.
3. Inventory of coastal resources and use.
4. Formulation of a Policy Framework for Integrated Coastal and Marine Management;

The national pilot components were:

5. Coral Reef Monitoring for Climate Change -- Bahamas, Belize, Jamaica;
6. Coastal Vulnerability and Risk Assessment -- Barbados, Grenada, Guyana;
7. Economic Valuation of Coastal Resources -- Dominica, St. Lucia, Trinidad and Tobago;
8. Formulation of Economic/Regulatory Proposals- St. Kitts & Nevis, Antigua and Barbuda;
9. Greenhouse Gases Inventory and Vulnerability Assessment of the Agriculture and Water Sectors – St. Vincent and the Grenadines

The project was managed through a five-tiered structure as follows:

(i) The World Bank as GEF Implementing Agency;
(ii) the GS/OAS as Executing Agency;
(iii) the UWICED as host to the RPIU, with responsibility for financial and general administration;
(iv) the Regional Project Implementation Unit (RPIU) as coordinator of the implementation of the field components of the project;
(v) the National Implementation Coordinating Units (NICUs) to, *inter alia*, coordinate and support the execution of activities undertaken by the project in which the government participates.

Methodological Issues

The CPACC Project was defined as a set of enabling activities seeking to strengthen regional cooperation and institutions to cope with the expected consequences of climate change. Capacity building in the region was the common methodological thread in all activities. The main challenge faced by CPACC in its initial design was how best to use limited resources and trained professionals in a new and fast developing field, to provide all 12 participating countries with basic knowledge to initiate climate change coping actions. CPACC adopted a dual approach: (i) to identify key, basic activities, , independent of future developments, such as data gathering systems, and (ii) to develop analytical tools for the particular conditions of Caribbean SIDS. In the former category were included the following activities: sea-level and climate monitoring (Component 1);

coral reef monitoring (Component 5); establishment of databases and information systems (Component 2), and; inventory of coastal resources and use (Component 3). Clearly, these activities are fundamental blocks upon which the Caribbean countries will develop not only climate change adaptation mechanisms but sustainable development plans.

CPACC correctly identified the need to adjust planning and policy development tools to the cultural, economic and social conditions of the region. In several cases the institutional particularities of each country implied methodological fine-tuning. The Project design allowed for these adjustments. Moreover, modifications were a welcome sign of knowledge transfer and country ownership.

CPACC faced methodological challenges in basic activities as well as in the adaptation of technical procedures to regional conditions. For example, CPACC made important contributions in designing a more accurate and reliable coral reef monitoring procedure and developing a Coastal Resource Information System (CRIS) that allows greater access to digital geographic information and monitoring data for decision-making. Lessons from the methodological approach taken by CPACC could also be derived from the management of complexity, the use of very simple climate change scenarios to create awareness and build capacity, building skills through hands-on activities, and on articulating the implementation of the project in 11 countries. These methodological issues are briefly described below.

Coral Reef Monitoring

Dr. J.D. Woodley developed a draft site selection protocol for the CPACC Project in November 1999. Under the protocol each pilot country would establish three "Operational Areas" that would present a range of coral reef conditions to be monitored, ranging from lightly impacted, to mildly impacted and heavily impacted. Within each operation area a group of three reef habitats or reef types would be monitored out of a possible five. A number of issues were taken into consideration before making a final decision on the method for recording information on coral reef community composition. The method should:

- be replicable;
- be able to quantitatively sample large areas of benthos;
- minimize the cost to the responsible national institutions in terms of human resource and time commitments;
- facilitate the easy exchange of data between collaborating parties for verification, quality control and quality assurance;
- generate information in a format that can be understood by policy and decision makers not trained in marine biology, and
- minimize the immediate need for taxonomic expertise in the field.

Video monitoring was considered to have a number of advantages over the chain transect method previously employed to collect coral data. It is an acceptable method of collecting coral reef data that allows a greater area to be monitored per unit sample effort and the results of video coral reef surveys had been shown to be statistically compatible

with those generated using the chain transect method as shown by test surveys conducted in Cayman.

The *Point Count Method* was initially considered as an alternative method for capturing and sampling the images form the videotape. It was felt that Point Count would facilitate standardized sampling among the pilot countries, producing permanent records of the samples used to generate the data. This would permit an operator's benthic feature identification to be rechecked for QA/QC purposes without introducing operator error in the rechecking process. Point Count could also save images for public awareness and archiving purposes. However, at the time of consideration in late 1999, the Point Count technology was designed for processing analogue, not digital videotapes. The Project adopted the software developed by Jeff Miller, USGS-USVI, for capturing and dotting images collected in digital videotape that was similar to the analogue Point Count process. The method was reviewed in late 1999 and subsequently adopted by CPACC for use by the lead agencies in the participating pilot countries.

A *Quality Assurance/Quality Control* Report was prepared in April 2001. The purpose of the QA/QC was to: (i) verify the possibility of minimizing the operator's subjective benthic identification; (ii) implement a QA/QC procedure, and; (iii) reduce the variation in the accuracy and precision of data collected due to operator error at various steps in the videotaping, image capture, random dot plotting (dotting), and data entry processes. The QA/QC Report/Manual provided guidance in the practical implementation of the monitoring and data analysis exercise through highlighting real problems and issues that arose during the monitoring program.

Coastal Resource Information System (CRIS)

The purpose of the CRIS is to provide a standardized repository for monitoring data pertinent to natural resources with an emphasis on impacts of global climate change. Ideally it is for summary data rather than the raw integrated data. The CRIS database has functionality for integrating datasets, browsing and querying tools, output tools to standard MS Office software (Word and Excel) and GIS software. It does not lay out which datasets should go into the system, but encourages the standardization of data formats, particularly ensuring the accurate recording of location and time.

CPACC has done much more than create a technical tool to aid climate change and natural resource monitoring. It has provided extensive training, set some important regional standards and created a regional GIS users group which has supported particularly the small island states with only a recent history of GIS. The following points should be noted:

Regional Data Management and Use. Databases are based around a national system. At this stage the only way regional management can use the databases is to have a complete copy. There is no strict way that data in a suitable format can be sent to the regional study. While the CPACC database records the metadata for some datasets, there

needs to be some way of recording what information has been recorded by each database, so that either regional or national management can see where data gathering gaps exist.

National Data Administration. The system relies on a central national coordinator who assimilates the database and distributes to national stakeholders. There is an administrative version of the CRIS which is only available to them. The additional functions in this system allow for import of new data. A major conceptual issue is in the presumption of the ways in which different government departments and other stakeholders in the CPACC CRIS will be willing to transfer data. The amount of manipulation of data that is needed by the administrator before someone's data can be put in would restrict many countries' departments from entering their information into the system.

National User. The national browser is a marvelous way of showing the available information in tabular format. The browse menu is very simple. The option to regroup different queries by classification could be restricted to the administrator, and that users should use preprogrammed groups of queries. In theory this database could be used by non computer specialists and aimed at both technical specialists and managers of natural resources. Where more work is required is in the presentation of information to key decision makers. The average civil servant who is meant to manage the natural resource will find it difficult to see the results they need in the tabular information presented.

With respect to the search for adaptation options and baseline studies the following general key methodological issues were faced:

Adapting to Climate Change is a Complex Process

Adaptation to climate change is intrinsically the process of interaction of the economy, environment and human society when forced by external agents. Each component is complex in itself. Their interaction, and how best to cope with external forces, is the area of work of climate change adaptation. CPACC understood that a long-term approach was necessary. Each stage should lay strong foundation for future work, while at the same time offering decision makers options to initiate the process, reduce uncertainties, and identify no-regret activities that should be implemented in the short or medium term.

With respect to building the initial blocks of a sound foundation for policy analysis, CPACC helped to strengthen data gathering systems-sea level and climate; coral reef monitoring, and coastal resources inventories. It also funded the development of tools to facilitate data analysis and decision making processes. The CPACC a) developed information tools for database management, to facilitate the understanding and management of complex natural resources components and their interactions with the economic system (ICZM); b) adjusted vulnerability and risk assessment tools to regional conditions; c) proved appropriate methods for economic valuations of goods and services provided by the environment, and; d) explored financial and economic tools to better manage the natural resources susceptible to be impacted by climate change.

CPACC coordinated the development of National Issues Papers, identifying the sort of actions that governments should pursue to minimize the negative impact of climate change. The scope of the National Issues Papers is well-captioned in St. Lucia's country paper, January 2001. *"This document's attempts to identify some of the key climate change issues of concern to St. Lucia. It lays no claim to being a comprehensive Vulnerability and Adaptation (V&A) study as more detailed work has being undertaken through other initiatives. It does endeavour, however to provide the broader context with respect to climate change and to point the way forward with respect to the formulation of a National Climate Change Policy for St. Lucia*[3]*."*

Lack of Climate Change Scenarios.

In its logical sequence, CPACC had to adopt a series of hypotheses, or conditions that need to be revisited as more and better information becomes available. Such is the case of climate change projections. Recognizing the limitations of existing Global Circulation models (GCM), CPACC adopted the simplest scenario: climate change is related to sea level rise with expected increases of 0.20 m., 0.50 m., and 0.90m. –1.0m. Under these simplified scenarios, climate variability remains constant, acting on a mean sea level some centimeters higher. It is assumed that as better information is generated, through more advanced and better-calibrated models, and projections have the required level of resolution, are more precise and less uncertain, other scenarios will be analyzed. By pursuing the long term approach, the region will have gained experience in the use and interpretation of results, and in the identification of adaptation options, by the time new scenarios are developed.

To support the future development of climate change scenarios CPACC included data gathering components and technical knowledge transfer through its institutional strengthening components. The region has agreed to include, in a CPACC follow up project, activities to improve on the resolution of climate change scenarios through "downscaling" the information from global circulation models[4].

It is possible to criticize CPACC for the selection of the basic climate change scenario. It does not include many of the tendencies already identified in the region. On the other hand, the Caribbean SIDS identified sea level rise as the most serious impact of climate change to their livelihoods. *"Sea level rise, in particular, would likely affect freshwater supply, increase beach and coastal erosion, increase permanent coastal inundation, and aggravate the impact of tropical storms. It also threatens the disproportionate share of industrial, tourism, energy, transport, and communications infrastructure concentrated in the coastal zone. The Intergovernmental Panel on Climate*

[3] "St. Lucia Country Paper on Climate Change Issues", Formulation of a Policy Framework for Integrated (Adaptation) Planning and Management, Prepared by Crispin d'Auvergne, Anita James and Devon Barrow. January 2001

[4] Two lines of inquire are being pursued: statistical downscaling of GCM and the use of regional climate models. Both methods present many restrictions at this time, but it is expected that as more basic information becomes available and research advances the quality, precision and resolution of the results will improve.

Change (IPCC) has calculated first order costs for the protection of Caribbean shorelines from future sea level rise, including low coasts, cities, harbors, island elevations, and beach nourishment, but excluding unprotected dry lands or ecosystems that may be lost, and the impacts of saline intrusion and increased storm frequency. For the Caribbean island territories, the projected cost of new construction for protection alone would be US$ 11.1 billion, which is well beyond the combined investment capacity of their economies[5]"

Limited Skill Base (Human Resources)

Caribbean SIDS have small populations and also a limited number of well-trained professionals. In the particular case of climate change, related skills and expert human resources are very scarce and dispersed over the region. In spite of laudable efforts, in many instances with external assistance, SIDS have only just begun to address the individual capacity deficit problem. The brain drain and traditional dependence on expatriates for specialized skills have hindered development of a national pool of staff commensurate with what is demanded. This is compounded by the lack of adequate training to deal with the inherent multiple disciplines and complexity, which lie at the heart of the global climate change challenge.

As the UNDP-GEF Capacity Development Initiative indicates[6]*: "Overall, then, SIDS continue to be deficient in a critical mass of intellectual capital, policy coherence, financial resources and qualified personnel that are needed to develop and implement sustainable development policies and projects. In turn, this hampers the emergence of adequate systemic capacity. With notable exceptions, the resulting institutional capacities are very low, especially in environmental matters."*

CPACC human development strategy focused on building and strengthening institutional capacity. Project implementation was articulated by the RPIU, but most of the work was conducted by regional and national teams, which received adequate training before and during subproject execution. Moreover, CPACC fostered a network culture to share data, results and experiences among teams. Final results were openly discussed in regional meetings to disseminate experiences and extract lessons learned. The CPACC Implementation Completion Report[7] draws special attention to the accomplishments in human resources development and institutional capacity building. It states, *"The capacity building through the project took the region from having little to no capacity in climate change to having a technically, politically and administratively competent institution for regional coordination and national staff in several countries with well- developed expertise for implementation of climate change monitoring, planning and policy."*

[5] World Bank. "Caribbean Planning for Adaptation to Global Climate Change Project" Project Document, January 1997.
[6] UNDP-GEF Capacity Development Initiative, Country Capacity Development Needs and Priorities; Report for Small Island Developing Countries. Albert Binger, September 2000.
[7] ICR 06/01/2002.

Working with 11 Countries

No less of a challenge was the development of mechanisms to support climate change efforts simultaneously in all 11 participating countries. Coordination, administration, public relations and political dialogue required the committed, enthusiastic and motivated professionals. It also demanded much time and effort.

Besides the willingness to coordinate all tasks with many stakeholders, CPACC devised an institutional arrangement that defined the role of the RPIU in terms of coordination, articulation and support to working teams. The national teams were appointed by the governments, with a national coordinator, the National Focal Point, NFP, named to lead and harmonize all national activities related to climate change. The enthusiasm and dedication of the NFP was an essential condition for good performance. The implementation institutional arrangement is described in greater detail below.

The CPACC Process

The CPACC process may be characterized as transparent, participatory, with strong client ownership and, demand-driven. These attributes were incorporated since its initial conception, implemented during project design, and strengthened during project implementation. The following two examples highlight the processes designed, their characteristics and accomplishments.

The Project Design Process

As already indicated, project preparation followed a highly participatory process. Initiated as a result of the Barbados SIDS meeting in September 1994, the project executing agency, OAS, undertook the task of formulating a project concept note. The preliminary project description was disseminated throughout the region, analyzed, discussed before receiving endorsement from the CARICOM Council of Ministers of Foreign Affair. OAS was then directed to submit the proposal for GEF consideration. Upon approval by the GEF Council, in May 1995, OAS and the World Bank, designed a consultation process including regional and national discussion. The consultation aimed at securing agreement at regional and at national level on:

- the structure and activities of the project;
- the institutional framework for project implementation;
- the management structure for the project.

The first regional meeting helped to build a team of country representatives, NFPs, and resource individuals that would be engaged in climate change adaptation in general, and with specific responsibility for the preparation of the project document.

A series of national consultations followed in each of the participating countries. The National Focal Points (NFPs) were asked to convene a core group of government agencies and private sector stakeholders that, given their mandates and/or interests would

have to play a leading role in addressing climate change in their country. With support from consultants and resource persons made available through the project preparation grant, these core groups undertook a series of meetings, culminating in a national consultation aimed at promoting awareness of climate change, and providing information on the intended project. National reports were produced defining the desired nature of each country's participation in the project.

A second regional consultation workshop reviewed the national reports and began integrating the proposed national and regional activities into a coherent work-plan. During this consultation the countries indicated their priorities with respect to the selection of pilot projects for national execution and defined the corresponding country commitments.

A third and final regional consultation workshop on the project design was held as part of the pre-appraisal review of the project document. The project structure and each of project components were reviewed in detail, addressing questions from the countries regarding operational and funding aspects. The heads or representatives of the key regional agencies that would be involved in the project implementation, UWICED, CMI (now CIMH), IMO, and CARICOM were also present, and the roles of these agencies were clarified.

Countries were active participants in the project design. They selected and appointed national representatives with a long-term view; empowered the NFP to voice the country needs and preferences; reviewed and adjusted the initial project document to represent their views, needs and capabilities; developed at the national level a network of public official, key stakeholders and civil society to advice on climate change adaptation issues, and; institutionalized the National Coordination and Implementation Units, NICUs. These national institutions were the main subject of training and capacity building. The success of CPACC in achieving its objectives rested in the adequate workings of these institutions. And the project succeeded.

Component 4. Formulation of Policy Frameworks. An example.

Component 4 assisted countries developing national climate change adaptation policy frameworks. The low adaptive capacity of the participating countries, as defined by IPCC reports, rendered them in need of immediate and urgent support to start adapting to current projected adverse effects of climate change. Preparations of these national policy frameworks followed a successful participatory process, were based on available information, and not contingent on the preparation of further vulnerability assessments and methodological work if the latter were not available.

More specifically, this component of the CPACC project was intended to assist national governments to: (i) strengthen national capacity for analyzing climate and sea level dynamics and trends, seeking to determine the immediate and potential impacts of global climate change; (ii) identify areas particularly vulnerable to the adverse effects of climate change and sea level rise; (iii) develop an integrated management and planning framework for cost-effective response and adaptation to the impacts of global

climate change; (iv) identify and assist in the development of policy options and instruments that may help initiate the implementation of a long-term program of adaptation to global climate change in vulnerable coastal areas.

For the implementation of the project two critical institutional arrangements were established: (i) The project team which consisted of the project manager, the consultant who was the component coordinator for the project, and regional technical personnel whose services were made available when required, and (ii) The project coordinating committee, which was established in each country with varied membership, and responsible for in country project implementation. This committee was chaired and administered by the National Focal Point.

Each participating country Focal Point submitted an "Issues Paper" to the CPACC project office at least one month prior to the commencement of the inception mission. Under the direction of the CPACC Project Manager, the Component Coordinator in consultation with the CPACC project office and country Focal Points established the timetable, meeting dates, agenda and list of participants. The team also ensured that each country Focal Point had satisfactorily prepared and returned in reasonable time the country-specific relevant Issues Paper;

The inception mission undertaken by the project team comprised a one-day meeting in each country with the project coordinating committee and select stakeholders. The purpose of the meeting was to review the Issues Paper and discuss the nature of activities that will be necessary for the formulation of a *National Climate Change Adaptation Policy* and Implementation Strategy. Stakeholders at the meeting, with the assistance of the project team:

- identified relevant climate change adaptation issues and pertinent adaptation planning and management mechanisms;
- identified the nature and scope of an appropriate *National Climate Change Adaptation Policy* and Implementation Strategy;
- developed an appropriate process for the formulation and subsequent adoption of the *National Climate Change Adaptation Policy* and Implementation Strategy at the highest level within government;
- formulated an appropriate consultation process including public awareness process.

The component coordinator, in consultation with project team and project coordination committee, developed an overall Inception Mission Report containing the country-specific "Issues Papers", the national meeting reports and any other relevant documents. The project coordinating committee circulated the Issues Paper and embarked upon an extensive consultative process.

As a preliminary step in completing the Issues Papers, some countries requested assistance in undertaking a review of existing policy, legal and institutional structures from the perspective of climate change adaptation planning and management. In most instances short-term local consultants were engaged with the support of CPACC.

A second meeting followed the period of review and consultation of the Issue Papers, focused on:

- a critical review of the "Issues Paper" during which comments arising from the consultation process were evaluated;
- the identification of appropriate interventions to address identified issues.

During this stage, Dr. M. Hedger, Head of the United Kingdom Climate Impacts Programme (UKCIP) participated in several of the in-country meetings. He shared experiences from Britain in developing climate change adaptation policies, and the consultation process implemented. Specifically, Dr. Hedger addressed the following: (i) the development of public / private partnerships – particularly in relation to the development and subsequent implementation of National Adaptation Policies and Implementation Strategies; (ii) awareness raising – input and ideas concerning the public education and awareness program; (iii) the development of partnerships for impact assessment and for generating policy options for adaptation.

Drawing upon the evaluation of appropriate management mechanisms outlined in the Issues Paper, the project team assisted national project coordinating committees and other stakeholders in the evaluation and identification of appropriate strategies for climate change adaptation planning and management and putting this information in the form of a "Policy Options Matrix".

For this exercise the project team prepared guidelines, in the form of option matrices per sector (health, human settlement, water resources, tourism etc), which provided a basis to:

- identify relevant climate change adaptation issues in the context of each country, presenting an overview of relevant social, economic, environmental and institutional aspects (drawn from revised Issues Paper);
- identify potential strategies and management mechanisms for climate change adaptation planning and management; and
- preliminarily prioritize the potential strategies (intervention options) previously outlined.

In consultation with different sectoral groups in each country it was possible to provide country-specific information (mainly expert knowledge under the different sectoral headings in the matrix).

The output from this exercise was intended to serve as a mechanism to facilitate the evaluation and testing of identified potential strategies and management mechanisms which, once reviewed (and revised as appropriate) constitute the basis for action at the national level. The strategies and management mechanisms included an outline of specific actions that need to be undertaken (by public and private sector) and policy, legal, and institutional aspects that need to be addressed.

Country-specific reports were prepared summarizing the participation process, the "Policy Options Matrix", the revised Issues Papers and a work plan for the for completion of the *National Climate Change Policies Framework*.

As part of the long term strategy to have national cabinets approve of the National Polices developed, sensitization of the political directorate at an early stage was essential. Country coordinators were encouraged to involve senior political figures in the national consultations that were held and in many instances they responded favorably e.g. in Belize the Prime Minister opened the Task 3 consultative workshop.

Assistance was provided by CPACC RPIU to develop materials for the presentations to the political directorate in order to obtain their support for the development and implementation of the *Climate Change Adaptation Policy Framework*. Representatives from the CPACC RPIU were required to attend and assist with the presentations to appropriate government representatives. Additionally, the CPACC RPIU assisted in the preparation of Information Notes for Cabinet to advise them of the proposed activities to be undertaken in the formulation of the *Climate Change Adaptation Policy*.

The National Focal Point and the project coordinating committee developed the first draft text of the *National Climate Change Adaptation Policy Framework*, which;

- identified activities and areas that are vulnerable, or at risk or that may be affected by anticipated local and regional climate patterns (drawing from the "Issues Paper" and the results from other CPACC activities when appropriate);
- outlined appropriate adaptation planning and management strategies for addressing anticipated climate change impacts in the short, medium and long term;
- defined the implementation strategy to give effect to the appropriate adaptation planning and management strategies, including time frames for implementation;
- identified activities that should be undertaken at the regional level to support and complement the national policies and implementation strategies
- identified the legal, institutional and financial mechanism that need to be established to give effect to the Policy and Implementation Strategy and to coordinate national and regional climate change adaptation activities;
- outlined the process whereby the *National Climate Change Adaptation Policy Framework* will be kept under regular and periodic review (possibly every 5 to 10 years) in order to accommodate new scientific findings, changing climate patterns and local circumstances.

All but two CPACC countries have drafted their *National Climate Change Adaptation Policies Framework*. Essentially this was the initial deliverable for this component. However, some countries have already submitted their final policies to

Cabinet for approval through a series of stakeholder meetings; appropriate documentation development; wide consultative processes; public education and dissemination of results and proposals, and the identification and support of political champions of climate change adaptation.

Key Findings

CPACC as a UNFCCC Stage I adaptation project aimed at enhancing regional and national capabilities to cope with the impacts of the global climate change through (i) institutional capacity building and human resources development, (ii) strengthening the knowledge base, and (iii) identifying policy options and instruments to initiate a long term program of adaptation to climate change in vulnerable costal areas. Key findings are related to these objectives looking at the CPACC project as the first stone in the construction of a cathedral. (a very important step, but just the first of many)

Climate change adaptation is a long-term program.

Since 1994 the Caribbean SIDS identified climate change as an important concern for sustainable development. Eight years have past and the countries completed a pilot project on Stage I activities, and are ready to initiate a follow up Stage II adaptation project. Achievements, while important, are few and shallow. Risk analysis and vulnerability assessments are "preliminary" due to a lack of basic information and limited analytical tools. Climate data collection systems are not yet reliable and time series are not long enough to identify trends. A great advance can be spotted in basic human resources capacity building, but highly focused on government official and regional consultants. It is estimated that a second GEF funded project will facilitate the integration of climate change concerns into planning and policy making, and will develop implementation strategies and institutional analysis upon which the Caribbean countries will be able to further develop its institutions to implement climate change adaptation measures. A time frame of four years is being considered for the implementation of the first ever stage II adaptation project. Specific climate change adaptation measures and investments should start, ideally, as early as possible on a no-regret basis. Information to guide the design and implementation of such measures and investments is not yet available and will probably take several years before investments fully incorporate climate change concerns in design and development.

In all, countries should adopt a long-term approach to climate change. Building on existing institutions, strengthening data collection systems, educating the population, and creating the participatory spaces for building consensus on the measures to undertake and implementation strategies. Other actors, the UNFCCC, multilateral development institutions, the donor community, etc., should also realize the long-time frame associated with adaptation to climate change and act accordingly, and facilitate the development of enabling environments at national, regional and global levels.

Climate change is expected to impact key economic sectors in the Caribbean.

Global warming is affecting coral reefs in the Caribbean. That is the conclusion of continuous improvements on reef monitoring and data analysis. Sea surface temperatures were found to be at the upper tolerance threshold for key coral formations, and bleaching has been linked to warm episodes above this threshold. Corals, coastal ecosystems, beaches, water resources and land resources will be impacted by changes in global climate. Recent studies are pointing out the economic magnitude of such physical impacts, as they affect the natural context upon which social and economic development takes place. Tourism, water supply, agriculture, health, and ecosystems will be affected. If climate variability is increased as a consequence of climate change, infrastructure vulnerability will correspondingly rise – in a non linear way- exacerbating damages from hurricanes, storm surges and extreme rainfalls. The economic quantification of such impacts is, nonetheless, still very preliminary, given existing scientific knowledge, data availability and the meager resources allocated for such endeavors.

Institutions need strengthening.

CPACC rightly identified as its main objective to support the Caribbean countries with institutional capacity building activities. It supports, and is supported by, recent pronunciations from the COP meetings that corroborate the high vulnerability of SIDS and emphasize the need for building adaptation capacity as a major trust of activities under the UNFCCC convention. A very important finding of the CPACC project is that, conditioned on countries' buy-in, it is possible to build institutional capacity, even if the process is slow. In climate data gathering systems over four years, the region has gone from zero capabilities and installed capacity to a network that today delivers data to the region and is contributing to the global monitoring effort by making data available to the Global Climate Observing System, GCOS. At the start of the project little institutional capacity on climate change was available. The project created an institutional arrangement and capacity at the national and regional level upon which further adaptation efforts can be built. The RPIU catalyzed the establishment of a regional network of institutions and individuals working on a coordinated manner on climate change. National Focal Point and the National Implementation and Coordination Unit, NICUs, continue to work as representatives of the countries needs and aspirations in climate change on the regional stage while coordinating efforts at the national level.

Climate and environment data collection systems are essential.

Data requirements for risk analysis and vulnerability assessments are very demanding. The Caribbean SIDS lacked of adequate institutional capacity for climate and environment monitoring. Climate data are essential, and require systematic and continuous records that extend for several decades. Without basic information, it is not possible to estimate the extent of the climate change impacts on the resource base or in key economic sectors. Economic assessment of climate change impacts requires data and baseline studies not yet available in the Caribbean. Future climate change adaptation projects should build upon CPACC achievements to continue strengthening the

institutional capabilities for climate monitoring and to facilitate the use of the data gathered.

Better vulnerability assessment tools are required.

CPACC piloted some preliminary vulnerability assessments. As already indicated a very basic climate change scenario was used. Nevertheless it was painfully evident the lack of adequate data, and the scarcity of analytical tools adequate for the particular conditions of the Caribbean SIDS. There is a need for the formulation of risk and vulnerability assessment tools compatible with the data available in the region, and with the need of information by decision makers.

Public education and outreach should be strengthened.

CPACC created awareness on climate change issues in selected groups of mostly government officials. Public outreach was only marginally sought. Although the project developed a good web-site it targeted mostly technically oriented individuals and teams working in CPACC. The region has a small cadre of well informed individuals, those who have been part of the CPACC effort. At the highest political levels the region has also individuals that understand the importance of climate change to the sustainable development of the Caribbean SIDS, creating an enabling environment for active, and proactive, participation in the UNFCCC fora. The rest of the population has had very little exposure to climate change information. No effort has been made, until now, to widely disseminate climate issues to the public at large or to incorporate climate change in the school curriculum. New projects post-CPACC, mostly the Adaptation to Climate Change in the Caribbean, ACCC, and the forthcoming Mainstreaming Climate Change in the Caribbean, MACC, include the design of a climate change public education and outreach strategy, supported by the former, and its implementation is contemplated as a main component in the later.

Lessons Learned

- Long term vision and sustainability are major requirements for climate change adaptation. Sustainability can be enhanced through building regional and national commitment and institutional and technical capacity. To build a long-term approach to climate change adaptation the UNFCCC and GEF need to play a more proactive role providing guidance and resources through programmatic, continuous projects.
- In situations where national capacity is weak in regional and global issues, a responsive, flexible, regional coordinating mechanism is an effective means of engaging the collective capacity of existing institutions and building capacity by acting as a clearinghouse for information and resources.
- Maximizing national participation, while not overloading institutions, is a major implementation challenge in regions with limited capacity. This can be dealt with through: careful assessment of capacity; ensuring government commitment; and

providing support that is responsive to the circumstances in the country through a regional institution.

- There is a strong need to ensure that the reality on the ground (institutional limitations, limited technical skills) is properly linked to the process being used by activities in this area. Because of the large anticipated impacts and the limited (yet growing) local capacity, it is essential that methods and tools employed be based on what can reasonably be expected to perform in the region. The thin capacity in the region is a challenge.
- Political buy-in is a major implementation and sustainability issue in adaptation to climate change and can be enhanced through a highly visible regional coordination institution, multi-stakeholder committee, public awareness campaigns and involvement of a variety of relevant national ministries. There is likewise a need to change/develop economic instruments and incentives to promote the climate change agenda.
- On the institutional front, the project illustrates the need for a flexible approach. The best option for the region seems to be the development of core capacity at the regional level that could articulate and bring together the limited institutional assets for work on climate change issues at the national level.
- The data collection networks need a much stronger support at the national level to perform at the level that is expected. A major effort is required in this front to ensure that the network is sustainable in the long-term.
- Complex projects that require flexible implementation may necessitate conservative schedules and cost contingencies.
- Finally, there is a danger that the efforts promoted by GEF and the UNFCCC at large in the area of climate change may be seen by some as an opportunity to capture financial resources instead of the mechanism by which adaptation needs are understood, formulated, internalized and acted upon. To face this danger, additional efforts need to be invested in the process of awareness among key policy makers and stakeholders.