

CARIBBEAN
Mainstreaming Adaptation to Climate Change Project (GEF)

Project Concept Document

Latin America and Caribbean Region
LCSEN

Date: October 19, 2001 Country Manager/Director: Orsalia Kalantzopoulos Project ID: P073389 Focal Area: G	Team Leader: Walter Vergara Sector Manager/Director: John Redwood Sector(s): VY - Other Environment Theme(s): Environment Poverty Targeted Intervention: N
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Program Financing Data

Loan Credit Grant Guarantee Other:

For Loans/Credits/Others:

Total Project Cost (US\$m): \$9.30

Cofinancing: Yes

Total Bank Financing (US\$m):

Has there been a discussion of the IBRD financial product menu with the borrower? Yes No

Financing Plan (US\$m):	Source	Local	Foreign	Total
BORROWER/RECIPIENT		1.50	0.00	1.50
CANADA, GOV. OF		0.00	2.00	2.00
GLOBAL ENVIRONMENT FACILITY		0.00	5.00	5.00
US, GOV. OF		0.00	0.80	0.80
Total:		1.50	7.80	9.30

Borrower/Recipient: CARICOM (SEE COUNTRIES LISTED BELOW)

Responsible agency: EXECUTING AGENCY REVIEW STUDY UNDERWAY, OAS (FOR PDF-B)

Participating Countries: Antigua & Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts, St. Lucia, St. Vincent & the Grenadines, Trinidad & Tobago.

Responsible Agencies: Final selection of the executing agency is being ascertained through an institutional analysis commissioned as part of preparation. Among the alternatives being considered is a regional agency specializing in climate change (The Caribbean Climate Change Center) newly proposed by the region, which would be established with the support of the Government of Canada, a project cofinancier, using UWICED as an executing agency; continuing the current arrangements, with an RPIU dependent on the OAS (Organization of American States); or using an established regional institution as executing agency.

OAS will be the responsible agency for the execution of the project preparation funds.

Parallel cofinancing from the Government of Canada will be provided to the recipient via the Canadian Climate Change Fund.

Parallel cofinancing from the Government of the United States will be provided through a in-kind contribution from NOAA (the National Oceanographic and Atmospheric Administration of the US Federal Government).

Project implementation period: July 2002-June 2007

A. Project Development Objective

1. Project development objective: (see Annex 1)

The Project Development Objective is to mainstream climate change adaptation strategies into the sustainable development agendas of the CARICOM countries, Small Island and Low-Lying Developing States (the twelve participating countries are: Antigua & Barbuda; Bahamas; Barbados; Belize; Dominica; Grenada; Guyana; Jamaica; St. Kitts; St. Lucia; St. Vincent & the Grenadines; Trinidad & Tobago). This will be sought through support for: (i) the integration of climate change considerations into development planning and sector strategies; (ii) the promotion of appropriate technical and institutional response mechanisms for adaptation to global climate change; and (iii) monitoring and modeling of regional climate change.

2. Key performance indicators: (see Annex 1)

To determine whether or not the project has achieved its development objective, the following indicators will be measured: (i) extent to which national development strategies identify and consider climate change a priority for sustainable development; (ii) adoption of adaptation plans and responses for natural resource management; (iii) percentage of total public expenditures that can be qualified as win-win adaptation opportunities; (iv) extent to which civil society expresses demand for policies and investment in adaptation initiatives; (v) increase in new climate change scientists and experts trained and working in public and private sector institutions; (vi) expanded involvement of national level government departments in vulnerability assessment and adaptation planning; (vii) increased level of public knowledge and awareness of climate change impacts; and, (viii) number of countries requesting assistance from the executing agency and/or third parties, in implementing Climate Change (CC) action plans.

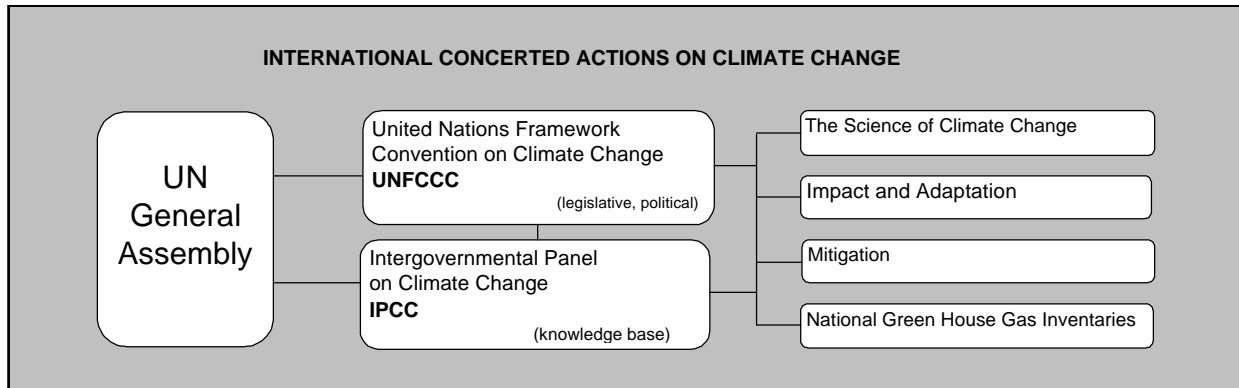
B. Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)

Document number: **Date of latest CAS discussion:**

The UN Framework Convention on Climate Change, UNFCCC, (See box No. 1, below) seeks to stabilize greenhouse gases concentrations in the atmosphere at levels that would prevent dangerous interference with the sustainability of economic activity. At the same time UNFCCC promotes adequate impact assessment of climate change in ecological and economic systems and supports adaptation policies to deal with the climate changes already observed and those contemplated for the next century. Box No.2 presents a simplified statement of the climate change problem as it relates to the Caribbean. Small Islands and Low Laying Developing countries have been identified as particularly vulnerable to climate change induced effects, due to their nature and localization in tropical areas, the expected economic and social impacts derived from climate induced effects, their low level of economic development, and weak institutional capacity. The participating countries fall within the category of highly vulnerable states.

Box One



Note to box: The UNFCCC is implemented (regulated) through decisions taken by the community of nations (conference of parties, COP) at annual meetings which also decide on how to use the financial mechanisms available for implementation of its mandate.

The COP also is assisted by the Subsidiary Bodies on Science and Technology (SBSTA) with scientific and technical information that may be relevant to its deliberations. The SBSTA meets prior to the COP meetings. The IPCC was constituted by the Convention as an independent and permanent consultative body to undertake scientific tasks (studies) to keep the COP informed and respond to specific requests for scientific information.

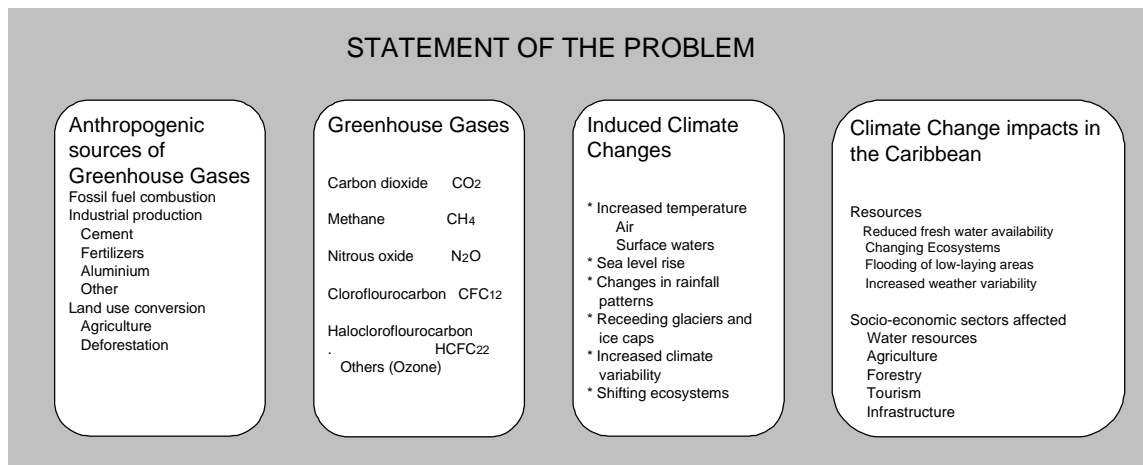
Climate change is an important topic of dialogue between Caribbean countries and the World Bank. The most recent CAS for the eastern Caribbean (June 2001) highlights the serious impacts that global climate change will have on the OECS small island developing states, and identifies as a CAS objective, the need to complement traditional disaster management approaches in the region with comprehensive disaster mitigation, sustainable land use and risk minimization measures to address anticipated changes in sea-level, sea-surface temperature and other regional impacts expected as a result of global warming. Similarly, the CASs for Belize (August 2000), Jamaica (November 2000) and Trinidad and Tobago (March 1999) highlight the importance of ensuring environmentally sustainable growth and reducing vulnerability to flooding and other damage from climate-related events through improved disaster management and mitigation.

The recent discussions in Bonn (July 2001), a follow-up of the Conference of Parties (COP) 6 to the United Nations Convention on Climate Change (UNFCCC), have resulted in a landmark agreement to reduce greenhouse gas emissions below the 1990 level, endorsing the process outlined under the Kyoto Protocol. In addition, the meetings in Bonn have also resulted in a reaffirmation of the flexibility mechanisms to the UNFCCC (i.e., the use of market systems to reduce greenhouse gas emissions, including the use of carbon sinks) as well as a strong endorsement of adaptation measures to the impacts of climate change. In fact, at Bonn, the discussions about preparation of this project contributed to the conclusion to support adaptation measures (resolution FCCC/CP/2001/L.4 of July 26, 2001). Specifically, the conference of parties has instructed GEF to support adaptation activities, especially in small developing island nations and low-lying states.

The proposed project is being designed to follow on the achievements of the GEF-funded Caribbean – Planning for Adaptation to Global Climate Change Project (CPACC), scheduled to close in December 2001. CPACC is being successfully executed through the Organization of American States (OAS) in partnership with the University of the West Indies Centre for Environment and Development (UWICED), with the World Bank as GEF Implementing Agency. CPACC's overall objective is to support Caribbean countries in preparing to cope with the adverse effects of global climate change. As a *Stage I Enabling Activity* (see definition of Stages in section 3), CPACC has

focused on creating awareness and organizing training in skills relevant to impact assessment and adaptation planning; collecting and disseminating sea-level and climate data in each country; conducting impact and vulnerability studies; and identifying policy options to address adaptation issues. The project has been very successful, and has been characterized as such by the mid-term review done by the Bank in September 1999 and by the GEF Climate Change monitoring and evaluation review in November 2000. The project is expected to close on time, fully achieving its objectives.

Box Two



Specific achievements of the CPACC project to date include the following: (i) establishment of a sea-level and climate monitoring system that contributes to regional assessment of the impacts from climate change; (ii) improved access to and availability of sea-level and climate change data; (iii) increased appreciation of climate change issues at national and regional policy-making levels and technical support to better define the regional position at the Convention and Conference of Parties; (iv) support for the development of vulnerability assessment tools and methods; (v) establishment of coral reef monitoring protocols to enhance regional monitoring and early warning capabilities; (vi) creation of a collaborative regional network for the establishment of programmatic linkages between climate change and related activities. A detailed description of the project and summaries of project evaluations to date are described in Annex 9. The linkage between CPACC's activities and achievements and MACC's proposed activities is summarized in Annex 10.

1a. Global Operational strategy/Program objective addressed by the project:

The strategic goal of the proposed project, namely to mainstream climate change adaptation strategies into sustainable development agendas of Caribbean Small Island and Low-Lying Developing States, is fully consistent with the GEF operational criteria for enabling activities under UNFCCC. The proposed project is a Stage II activity as defined under the UNFCCC and COP decisions and is consistent with recent guidance issued by the Conference of Parties (Bonn meeting, July 2001) on adaptation issues. Stage II activities include medium-term measures that would enable particularly vulnerable countries or regions to develop policy options for adaptation, as well as appropriate capacity-building which may be taken to prepare for adaptation, as envisaged in Article 4.1 of the UNFCCC. According to the GEF's Operational Strategy, GEF-financed activities include enabling activities designed to facilitate implementation of

effective response measures to climate change, as well as adaptation activities which seek to minimize the adverse effects of climate change. The proposed project meets the operational criteria for enabling and adaptation activities insofar as it would seek to mainstream climate change adaptation strategies through (i) support for national and regional capacity building; (ii) the development of appropriate technical and regional response mechanisms for adaptation to climate change; and (iii) support for regional climate change monitoring and modeling.

2. Main sector issues and Government strategy:

Sustainable Development and Climate Change Issues

Poor Linkage between Climate Change Issues and National Planning

Despite increased awareness and activism in international fora, climate change issues have rarely been included in development decision-making in the participating countries. Successful adaptation to climate change (actions consciously undertaken to adjust processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change) depends on the extent to which these issues are addressed as part of sector planning and practices. As the foreseen impacts from climate change in the region are better defined or start to materialize, this will become more and more critical. However, the agenda for this mainstreaming has yet to be specified in detail.

Limited Regional-level Information on the Potential Effects of Climate Change

The Intergovernmental Panel on Climate Change has reviewed the current scientific understanding of the vulnerability of ecological systems, socioeconomic sectors and human health. It concluded that it is extremely difficult at this stage to analyze the viability of different adaptation options, in part due to the fact that the benefits of adaptation options depend on local ecological and social climate-induced changes. Although the direction of these changes can normally be estimated with confidence, the magnitude and rate of change are much less certain. In order to employ economic and other reliable assessment tools to develop adaptation options, climate change models will need to be "downscaled" to predict regional climate change with more accuracy.

Limited Institutional Capacity

While most Caribbean countries have developed across-the-board institutional approaches to address sustainable development, there are still a number of weaknesses at the institutional level, which continue to hinder effective, long-term progress. These include:

- Limited human resources. Limited human resources are available in areas such as climate change, biodiversity, environmental management and land-use planning. There is also a lack of clearly defined functions, responsibilities and mandates resulting in fragmented and ultimately ineffective management of institutional assets.
- Insufficient scale. Efforts to address environmental and natural resource management issues are constrained by the limited resources within relatively small countries, and are further exacerbated by the effects of the brain-drain and limitations in scientific infrastructure and technical skills. CPACC has begun to address these issues in the climate change area but a significant effort is needed to address weaknesses that are part of the current institutional framework and culture.
- Externally-driven. Many of the advances made in environmental and natural resource management have been, in part, externally driven. The usual result is that when such projects end, there is little

institutional capacity to sustain activities needed for a programmatic approach, because national capacity and permanent, self-driven and self-sustained institutional mechanisms were not developed.

- Poor coordination. Coordination between agencies is often poor. For any critical resource management issue, responsibility is usually shared among two or more agencies, particularly as new disciplines develop, which can lead to duplication of effort and turf battles. In addition, there has been limited success in forging meaningful partnerships between the public and private sector.

- Reactive rather than pro-active. Policies developed by agencies are usually based on the need to address a particular problem and often are reactive and inflexible. Few of the sectors identified have plans that comprehensively address the issue from problem identification to monitoring and follow-up. This is an institutional weakness common throughout the public sector in the Caribbean.

Government Strategies

Since COP4 (1999), the region has taken greater interest in climate change issues and their relevance to development planning. In the Barbados Program of Action (BPOA) adopted at the UN SIDS conference held in Barbados in 1994, "Climate Change and Sea-Level Rise" was first among 14 areas identified as threats to the sustainable development of small island states. The BPOA designated Belize as the chair for issues affecting sustainability. At the 2000 meeting of the Caribbean Ministries of Finance and Environment, a list of priority activities for sustainable development were identified; the list included planning for climate change. CPACC has already made significant contributions through various regional and pilot activities designed to establish the necessary knowledge base and capacity in planning agencies for the development of productive policy linkages between climate change and other related issues. In April 2001, the OECS countries signed the St. George Declaration, under which Principle 4 states: "member States shall implement obligations under the UNFCCC and establish appropriate legal, technical, and regulatory mechanisms for adaptation to the impacts of climate change." However, to be effective, these efforts need to be mainstreamed into the sectoral development agendas.

The CARICOM community has realized that there are serious constraints on building institutional capacity in the region. The community has responded with education and training initiatives to promote the acquisition of management and technical skills and maintain them in the region. Efforts are being made to improve coordination between existing institutions and reduce fragmentation of institutional efforts. A task force under the leadership of the Prime Minister of Belize was recently formed to ensure that all institutions with mandates in sustainable development become better coordinated and overlaps are minimized. In addition, CPACC has made significant contributions towards institutional strengthening and capacity building of regional and national agencies through project related training, as well as through playing an important role in catalyzing the formation of a productive dialogue among resource management and planning agencies involved in climate change related activities.

The next stage envisions strengthening management capacity while developing instruments to assess the impacts of climate change and define strategic options to change processes, practices, and structures to reduce potential damages and to benefit from opportunities associated with climate change.

Sector issues

Vulnerable Sectors

As discussed above, small island states and low-lying areas are particularly vulnerable to the effects of climate change. The need for adaptation has become increasingly urgent, even if swift implementation of global agreements to reduce future emissions occurs. The Caribbean is most vulnerable to the anticipated effects of global climate change on: sea level, sea temperature, precipitation and wind and ocean currents. On the other hand, few regions of the world are as directly dependent on their natural resource base as the Caribbean. The table below shows the potential effects from climate change more specifically, including the sectors most likely affected and their linkage to the natural resource base of the region.

Linkage between key sectors and their natural resource base from a climate change perspective.

Issue or resource vulnerable to climate change	Potential effect of CC	Sectors at Greatest Risk*	Economic Relevance **
Freshwater availability	Reduced precipitation; increased evaporation and saline intrusion from sea level rise.	Water resources, agriculture and forestry	Water supply is anticipated to be a bottleneck for economic activity and serious health concern. All water using sectors would be affected.
Degradation of Marine and Coastal ecosystems	Sea level rise and changes in sea temperature can affect important ecosystems such as mangroves, fishing grounds and coral reefs.	Fisheries and tourism	Fisheries account for a sizable share of GDP. Tourism accounts for up to 83% of GDP and highly depends on the marine ecosystem.
Land flooding	Sea level rise will result in flooding of coastal areas.	Tourism, agriculture and forestry.	Most tourism activities are located in the coastal zone. Significant capital investment assets and infrastructure could be affected.
Climate	Climate change may increase extreme events such as precipitation intensity, tropical storms or droughts.	Multisectoral	The cost of hurricanes and other natural disasters in the Caribbean region have been estimated at several hundred million during the last decade.

* The above sectors have been identified by the IPCC as ones that could be negatively affected by climate change in small island and low lying states. Modeling efforts, however, have not been undertaken to understand the extent of the impacts on these sectors in the Caribbean. ** During preparation, the extent of the impacts will be better defined to allow adaptation options in these sectors to be properly considered.

Among the most important sectors at risk is tourism. Tourism is the single largest contributor to GDP in many Caribbean countries, accounting for up to 83% in Antigua and Barbuda, 46% in St. Lucia, and about 25% both in Belize and Grenada. It is also one of the fastest growing industries. Tourism arrivals in the Caribbean doubled between 1980 and 1996 and the industry has the potential to grow 70% and create 2.2 million jobs by 2007. With its economic importance and dependence on sensitive natural resources and coastal property, its vulnerability to climate change is of great concern to the region. Additional sectors at risk include agriculture (8% of the GDP), fisheries and water resources and their associated infrastructure.

Tourism

Tourism activity has strong linkages to the quality of the natural resources of the area including coral reefs and other natural areas, weather, beaches and coastal property and access to basic services including water supply. There is a growing consensus within the scientific community that climate change will likely be disruptive to these resources (water supply, coastal resources and weather disruptions) and result in severe economic and social effects on islands where tourism is an important economic sector. Of particular concern is the tourism infrastructure (ports, hotels, water supply) and beaches which are at risk from

inundation or erosion due to sea level rise. In addition, as sea temperature rise has been shown to cause death or bleaching of coral reefs, these and other tourism-related ecosystems are also at risk.

Water Resources

Records show that rainfall has been decreasing during the past century in the eastern Caribbean and the Yucatan peninsula. Recent modeling efforts forecast further reductions in rainfall in regions just above and below the equator as a result of global atmospheric warming. Most islands in the Caribbean are already water-deficient or face significant water resource management constraints. According to UNEP's Caribbean Environment Outlook, regional water demand is expected to increase by a factor of 1.6 over the next 50 years. Yet, there are very few incentives for water conservation and tariff structures frequently do not reflect the opportunity cost of water. The ability to meet future demand will be affected by climate variability and change since most countries depend significantly on rainfall to replenish aquifers and may also be vulnerable to salt water intrusion as a result of sea level rise. The additional reductions in rainfall associated with global climate change would have a significant impact on water supplies, agriculture and forestry. In addition, the infrastructure for water supply will be impacted by the needs for water conservation and vulnerability.

Exacerbating this issue is the structure of water tariffs and rates. Generally, water is not being treated in the region as an economic and environmental good and consequently, water rights, markets and pricing are not being used to improve its sustainable use. Essentially, governments subsidize water use. Furthermore, only a few (Barbados, Trinidad & Tobago) national water resource inventories and management plans exist. This in turn creates conditions detrimental to sustainable water supply and demand.

Fisheries, Forestry and Agriculture Sectors

The Caribbean region has 20,000 km² of reefs and approximately ten times that area in shallow water systems, such as sandbanks, seagrass beds and spongebeds. These ecosystems are at medium to high risk from the effects of climate change. Hurricanes have been identified as the main source of natural impacts on shallow reefs. One likely outcome of climate change is the disruption of fishing grounds as response to possible new sea current patterns with increased upwelling (bringing more nutrients to the surface and providing more food for the fish). Mangrove communities in small islands are expected to suffer contraction in their geographical distribution, as consequence of sea level rising and continued reductions in precipitation. Generally, however, the expected impact of climate change on fisheries in small Caribbean islands is rated as moderate. These ecosystems are not affected by sea level rise per se. But fish banks could suffer if the rate of climate change disrupts the natural succession of coastal ecosystems (e.g., mangroves, sea grasses, corals) on which the species depend. Climate change may also result in increased incidents of coral bleaching and fish kills stemming from algae blooms caused by high nutrient levels in coastal waters combined with higher temperatures and a reduction in freshwater infusion because of changing ocean currents.

Diminished rainfall will affect the agriculture and forestry of the nations in the region. The full extent of the impacts on the agricultural and forestry sectors have yet to be assessed and quantified. It is anticipated that climate change will impact food production and yield, food security, drought relief programs, and exacerbate other problems associated with the agricultural and forestry sectors, including soil erosion, land degradation and loss of fertility. Jamaica and Antigua for example are already experiencing unparalleled droughts affecting their outputs and yields. Infrastructure for water supply in agriculture and forestry will be affected by requirements for conservation, storage and vulnerability

Government Strategies: Sectoral Approaches

Tourism

Traditionally, sustainable development of tourism in the Caribbean has been approached using command and control mechanisms. This has often failed because of the large resources necessary to implement such an approach. Recently, market-based incentives including duty and tariff relief and tax deductions for environmental or water-conservation equipment and water and sewage charges for industrial and domestic water users have been introduced in some countries. Initiatives supported or led by the private sector are also gaining popularity. These include the Green Globe 21 and Blue Flag environmental certification programs and other programs to encourage eco-tourism or preserve the environmental resources important to tourism.

Additionally, many multilateral agencies have funded projects to reduce pollution stresses on the tourism resources (World Bank: OECS Ship Board Waste Project and Solid Waste Management Project; Dominican Republic Wastewater Disposal in Tourism Areas Project; IADB solid waste management projects in Barbados, Bahamas, Jamaica and Belize) as well as projects that encourage sustainable development of the tourism industry (IADB regional project on Caribbean, Tourism, Health, Safety and Resource Conservation; IADB projects in Belize and Trinidad and Tobago).

Water Resources Management

Regionally, all of the Caribbean SIDS are participating in the development of a GEF Project (currently at an early stage of formulation) focused on Integrated Watershed and Coastal Area Management (IWCAM). Under the project, the SIDS will undertake an assessment of the status of national policies and legislation on freshwater management, receiving assistance with the adoption of incentives-based, self regulatory mechanisms for water management. The IWCAM will also review lessons and develop guidelines to implement pertinent pricing and tariffs. IWCAM will address some priority issues through demonstration projects, promotion of economic instruments and regional activities to be further defined during project preparation. IWCAM and MACC will be closely integrated to ensure optimization of resources and elimination of any potential overlaps. A draft protocol of coordination was agreed by both project teams during the IWCAM Steering Committee Meeting held in St. Lucia on August 21, 2001 (see Annex 11). Additionally, the OECS member countries are taking part in the early development of another GEF Project that focuses on integrated ecosystem management (preparation of the proposed project will be done in close interaction with these efforts), although efforts to formulate this project have not advanced enough to be able to comment.

Governments are examining new pricing structures, and are also restructuring their water authorities when necessary. St. Lucia recently changed the Water and Sewerage Authority (WASA) to the Water and Sewerage Company (WASCO), which was privatized and granted a 25-year license to provide the people of St. Lucia with adequate water, sewage and other incidental services. WASCO is also required to "take action as may be necessary or expedient for the purpose of conserving, redistributing or otherwise augmenting water resources in St. Lucia." This includes maintaining records with respect to water availability and consumption patterns, planning for future demands and the preparation of water management plans. This example is being carefully monitored in the region for its potential replication.

Monitoring of water resources is a high priority activity for all of the governments. Some governments have the capacity to install and maintain extensive monitoring networks, whereas others are able to carry out only minimal monitoring activities. Deficiencies are being addressed both by national governments and regional projects. For example, under a proposed CIDA initiative, the Government of Dominica is looking at the formulation of a comprehensive water use and management strategy. Finally, many countries are adopting new legislation to promote sustainable water resource management. This legislation is addressing a variety of issues, e.g. establishment of protected land areas, agricultural practices, coastal development,

tourism activities, public health. However, a review of these policies and experiences through the lens of CC impacts is urgently required and will be carried out under MACC.

Agriculture, Forestry and Fisheries

The CARICOM community, under their current agricultural policy (CARICOM Agricultural Policy Statement, May 2000) has stated clear principles for the sustainable use of fisheries, agriculture and forestry. The principles call for promotion of the development, management and conservation of these resources in member states on a sustainable basis. The Community's strategy in this regard calls for the sustainable management of its biological resources and enhancing the institutional capabilities of member states to design and implement biological resources management systems. Specifically for fisheries, the Community has subscribed to the Convention on the Law of the Sea and encouraged the establishment of protected aquatic habitats and associated terrestrial areas and fish populations for the sustainable development of fisheries resources of member states. Despite the comprehensive nature of the strategy, key aspects have yet to be implemented and others are being delayed by lack of resources for their implementation; there is also room to integrate the impacts of climate change in the natural resource management policies of the community and an opportunity to move the agenda forward through this process.

Government Strategies: Cross-sectoral Approaches

Disaster Management/Emergency Preparedness

During the past few years, the Caribbean Disaster and Emergency Response Agency (CDERA) has encouraged the CARICOM member states to upgrade the National Disaster Offices (NDO) and to dedicate the necessary resources to their operation. This has met with some degree of success, as evidenced by a recent review of the performance of the NDOs in the 16 CDERA members (CARICOM states and UK territories) against a wide range of criteria covering such items as legislation, staffing, emergency operations center, public education, and research capability. All have made progress over the past ten years, and four of the 16 have achieved a very satisfactory rating. Additionally, multi- and bi-lateral donors have supported projects aimed at expanding disaster management capacity and implementing structural and institutional measures to reduce vulnerability to natural disasters. These projects include several World Bank projects (in Guyana, Jamaica, St Lucia and OECS-wide), IADB projects (in the Dominican Republic and Belize) and a USAID project (region-wide). The Pan American Health Organization has also been active in preparing the health sector in the region for natural disasters.

While activities to date have improved the ability of the countries to prepare and respond to natural disasters, much remains to be done, especially in the areas of staffing and linkages with other government agencies. CDERA, with the assistance of UNDP and of the Office of Foreign Disaster Assistance of USAID, is developing a Comprehensive Disaster Management strategy which would aim to integrate disaster management into the development processes of its member states. This wide ranging strategy has the support of all CDERA member states. At the regional level, it calls on donor agencies to incorporate Comprehensive Disaster Management into their own programs, calls for a stronger role for other specialized regional agencies such as CIMH, CEHI, in disaster management, and includes increased research and training coordinated by regional institutions. At the national level, the strategy aims to enhance the preparedness, response and prevention capability of the NDOs, and to improve the use of hazard information in the national development decision making process. But CDERA has yet to integrate disaster mitigation in its activities. Monitoring and modeling efforts of regional impacts of CC have the potential to improve the deployment of resources for disaster preparedness. A combined approach that deals with climate change and disaster management would facilitate the integration of both concerns. CARICOM intends to use the proposed project to facilitate this integration.

Land Use

Land use planning strategies and zoning are useful tools to guide local governments to integrate climate change issues in development plans. A CARICOM study identified three major problems in reducing degradation and effectively implementing land-use planning:

- Lack of rationalization of existing related statutes to ensure efficiency and effective enforcement;
- Decentralized nature of environment and land-use policy;
- The ineffective enforcement of present legislation and needs to address these weaknesses for developing and implementing further policies and regulations.

The Caribbean SIDS, under the IWCAM project are committed to undertaking a comprehensive review of land use issues as these relate to sustainable development. The review is expected to provide the basis for a region-wide strategic vision on land use planning, including the development of specific guidelines, that will address the issues identified in the CARICOM study.

3. Sector issues to be addressed by the project and strategic choices:

Strengthening of the Institutional Setup for Managing Climate Change

Through project preparation, the most appropriate institutional setup for managing climate change and implementing the project will be carefully ascertained through an institutional analysis (see Annex 9). This setup will be strengthened and fine-tuned as part of the project with the purpose of creating a self sustaining mechanism that would lead the process of mainstreaming of climate change issues in the region.

Mainstreaming Climate Change Issues into Development Planning

In order to address the poor linkage between climate change issues and planning, consideration of climate change will be mainstreamed into the planning process and treated as part of the domestic agendas. A key activity of the project will be to incorporate climate change impact and risk assessment into long-term planning. Economic impacts of climate change and implications of alternative responses will be assessed. This will include working with the line agencies and private sector stakeholders important to climate change issues in the region in close coordination with Ministries of Planning and Finance. The linkage with disaster planning will also be addressed. Coastal vulnerability assessments initiated under CPACC will be expanded to cover other areas and sectors essential to the sustainable development of participating countries.

Without the proposed project it is doubtful that the development planning process will have access to the resources required to incorporate and internalize climate change concerns.

Mainstreaming Adaptation into Vulnerable Sectors

A main goal of the project will be the mainstreaming of climate change concerns into highly vulnerable sectors including tourism, fisheries, agriculture and forestry and water resources. This will be done in close coordination with public sector institutions including the Ministries of Planning and Finance as well as the private sector. It will include review and enhancement of climate change scenarios, assessment of impacts, development of adaptation measures, formulation of management strategies, and implementation

of programs as pilots to demonstrate adaptation measures. The project will also integrate climate change concerns into the planning process for the line agencies for tourism, water resources management, fisheries and agriculture and forestry. The sector issues related to climate change will also be addressed more broadly through project activities to revamp land-use planning and coastal zone management and strengthen technical norms for infrastructure development.

Supporting Stage II Activities in the Adaptation Process

CPACC was a Stage I adaptation project, with a focus on developing appropriate capacity to assess the potential impact of climate change, and to identify policy options for adaptation. Stage II adaptation, which is being discussed in the context of the COPs and Subsidiary Bodies on Science and Technology (SBSTAs), is anticipated to include further capacity building and specific steps leading to the formulation of specific technical and institutional adaptation measures. In order to facilitate the linkage between climate change and planning, the new project is designed to meet the regional needs for Stage II adaptation and facilitate the regional integration of Second Communications and Adaptation Plans to the Convention. **To guarantee the project contributes to this, the institutional setup of the project and the project design will include mechanisms to ensure that the outputs of the project will be integrated into national communications.** The project will also pave the way for Stage III activities which, as presently defined, covers the implementation of measures, including further capacity building, which may be taken to prepare for adaptation.

Even with the strong results from CPACC, it is unlikely that the countries in the region would have the technical and financial resources to initiate on their own the next stages of the adaptation process.

Need for Additional Efforts on Climate Change Monitoring and Modeling

The Intergovernmental Panel on Climate Change, IPCC, has reviewed the state of the art information on the vulnerability to potential changes in climate of ecological systems, socioeconomic sectors, and human health. It concluded that it is extremely difficult at this stage to analyze the viability of different adaptation options because their cost/benefit ratio depends on ecological and social conditions and the integration of local and external markets. Although the direction of change normally has high confidence ratings, the magnitude and rate of change do not, reducing the reliability of tools to infer the magnitude of the impacts on productive systems, and limiting the usefulness of economic assessments until more reliable climate change models are designed to predict regional climate behavior. MACC will, as one of its key outputs, develop the basic information needed to initiate the Economic Assessment of adaptation policies. It includes improving climate change modeling resolution in the Caribbean, the development of climate change scenarios, modeling water and ecological systems to increase the reliability of potential outcome forecasts, as preliminary steps towards the economic assessment of alternative adaptation options.

The internalization of climate change issues into sectoral agendas requires strong data and modeling support, which the project will also facilitate. While the primary objective of the monitoring effort so far has been to provide sea level change, sea surface temperature and coral bleaching measurements, further investments are needed to enhance the capacity of the regional network to enable it to act as a practical repository of climate change related information on vulnerability and adaptation assessments. The network

also needs to be enhanced to support the global monitoring networks, which will increasingly depend on regional and local contributions, such as GLOSS (Global Ocean Survey System) and GCOS (Global Climate Observation System). The data collected have a variety of practical local applications in natural resource and emergency management, and the study of climate risk. These applications are essential to the design of adaptation activities and, at the same time, are valuable for ensuring the long-term sustainability of mainstreaming efforts.

Regional climate modeling is required to translate the data collected into useful guidelines for decision-making. Planning scenarios for the Caribbean basin require increased resolution (downscaling) of global climate models. MACC will support such efforts as well as strengthening local capacity for further data analysis, interpretation, and use to refine adaptation strategies.

Without GEF support the necessary investments are not likely to be made available for these efforts in a timely fashion, therefore delaying the adoption of planning tools, the integration of the data into adaptation measures of economic sectors and the contributions to the global monitoring systems.

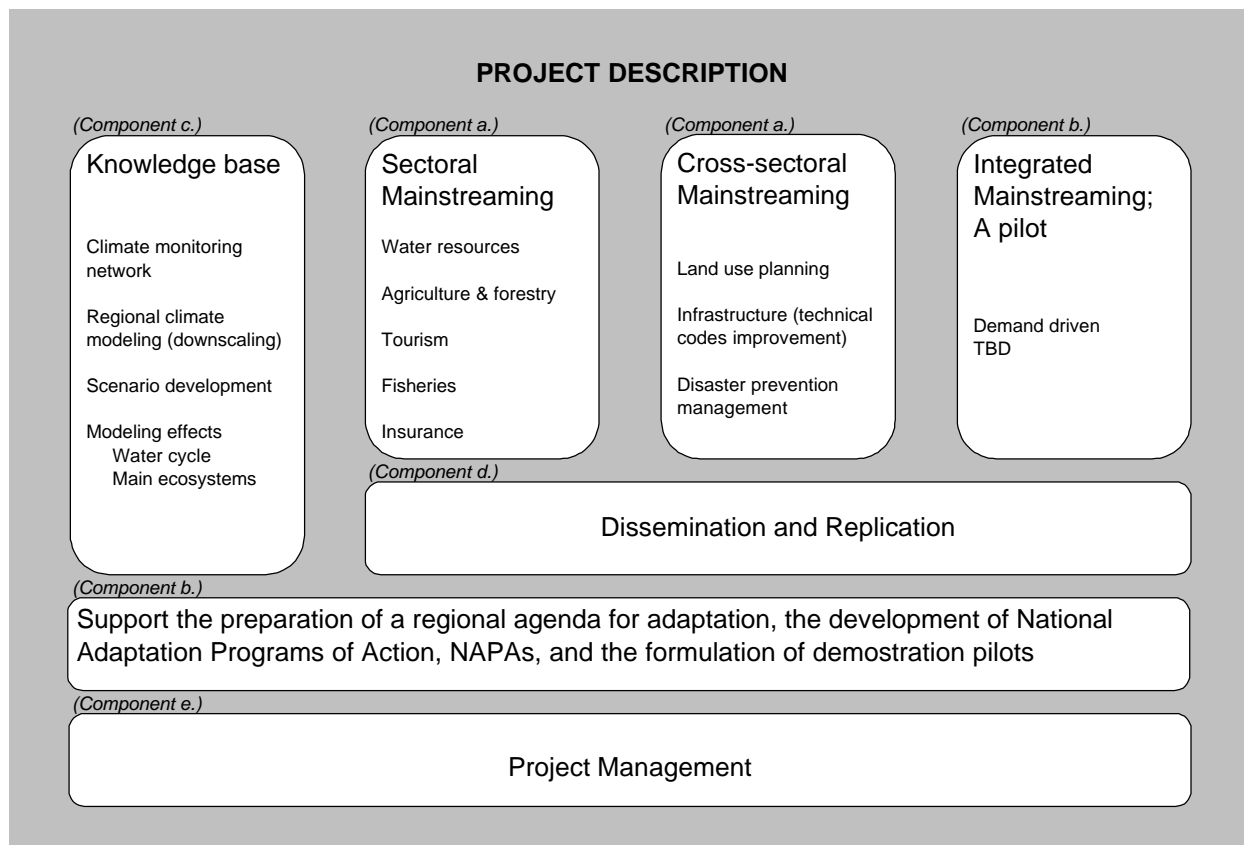
C. Project Description Summary

1. Project components (see Annex 1):

The project will build capacity in the CARICOM Small Island Developing States (SIDS) and Low-Lying States (participating countries include: Antigua & Barbuda; Bahamas (to be confirmed); Barbados (to be confirmed); Belize; Dominica; Grenada; Guyana; Jamaica; St. Kitts; St. Lucia; St. Vincent & the Grenadines; Trinidad & Tobago) to develop Stage II adaptation strategies and measures (as defined by the Conference of Parties to the UNFCCC) through the mainstreaming of adaptation into the general planning process of the countries in the region. This will be sought through four inter-related courses of actions (components), as depicted in Box Three:

Box Three

Schematic of project activities



(a) Mainstreaming adaptation to climate change in national development planning and vulnerable sectors

This component will focus on the integration of climate change concerns into planning and practices of highly vulnerable sectors (tourism, infrastructure, water, fisheries, agriculture, forestry and coastal zone management) and the line agencies that support them. Specific activities include:

Assessing the impacts on main economic sectors such as tourism. The impacts on the tourism sector (which accounts for approximately half of the GDP in many Caribbean nations) will be diagnosed and adaptation measures will be identified. Part of the effort will involve the assessment of costs (and benefits) of the climate change impacts and the proposed adaptation actions to sample local communities and the sector at large so that the trade-offs involved in failure to adapt are made clear. MACC will work closely with local and regional institutions, and donors and development organizations to analyze the role of insurance instruments as risk reduction mechanisms. The project will work with leading insurance corporations, to jointly explore their potential role and to analyze enabling mechanisms and policies required for their active participation. The project will finance the required consultancies and training.

Strengthening Technical Norms for Infrastructure Development. MACC will address the implications of climate change in existing and proposed infrastructure. In particular MACC will provide technical and institutional support to assess existing vulnerabilities to rising sea level, declining average rainfall and increased variability in tropical storms intensity, and assist in the development of guidelines and technical norms for major works of infrastructure. MACC will support engineering associations and universities to incorporate CC issues as

integral elements of technical norms for design, maintenance and reposition of infrastructure and support proposals for changes in infrastructure codes. This activity will incorporate existing vulnerability assessments as well as those proposed under component (b) and initiatives dealing with disaster preparedness in the region. The project will finance the required consultancies and training.

Assisting the water resources planning boards (WPB) to assess the impact of climate change on freshwater availability: This impact of climate change on the water cycle is likely to be felt through reduced precipitation and salinization of fresh water lenses. MACC will assist countries with the identification, formulation and adoption of selected measures that would enable key economic sectors and the local economies to adapt to the anticipated reduction in water supplies (including the assessment of pricing, tariff structures and incentives for water use management, in the case of climate-induced, reduction in availability). The project will assist the WPBs in participating countries to incorporate into water sector plans the impacts of climate change on water availability. The project will finance the required consultancies and training to make the assessments and support the drafting of the plans.

Assisting the fisheries departments to understand the impacts of shifting fishing grounds, impact on total stocks and the bleaching and death of coral reefs. MACC will assist the region in identifying and formulating measures that would enable the fisheries sector to develop alternatives to address impacts on fisheries and coral reefs. The outcome will be a regional fisheries sector plan that takes into account the impacts of climate change. The project will finance the required consultancies and training to undertake any assessments and support the drafting of the plan.

Improving the understanding of climate change impacts on the agriculture and forestry sectors. The project will assist farming communities, through the agricultural departments with the identification of crops and agricultural practices best suited to conditions resulting from climate change, and will strengthen the analysis and planning capacity for climate change at the agricultural and forestry departments. The project will assist the agricultural and forestry departments in the preparation of action plans to address the anticipated impacts of climate change. The project will finance the required consultancies and training.

Revamping land use planning and coastal zone management. The project will address the implications of medium to long term sea-level rise and climate change on land use planning nationwide (under CPACC, the focus has been limited to coastal zone management, CZM, as a strategy for adaptation to climate change and sea-level rise which has resulted in a methodology and the completion of an inventory for CZM resources). It will also assist coastal stakeholders with the formulation and implementation of cost-effective options for protection against sea-level rise and the redesign of infrastructure to meet future climate change impacts. In addition, there is a synergy between the actions aimed at reducing the near-term risks of climate change and extremes (natural hazards) and those aimed at reducing the long-term risk of climate change. MACC will work with planning agencies to develop a methodology for explicit consideration of the risk of long term climate change in land use planning.

(b) Supporting the formulation of specific measures for adaptation (demonstration pilots) and of a regional position on adaptation

(i) Formulation of demonstration pilots for adaptation

Under this activity, the project will support the formulation of specific adaptation measures. Specifically, the project will finance feasibility assessments for selected demonstration projects with high potential for replication, to illustrate how adaptation planning and assessment can be practically translated into actions that will provide real benefits and can be integrated into national policy and development planning (as requested by the UNFCCC). The demonstration projects to be assessed will be selected from submissions by the participating countries based on the potential impact, replicability and cost effectiveness. For example, some of the activities that may be supported include: a) the development of guidelines for port and coastal zone infrastructure; b) assessment of water desalinization plants; c) evaluation of the adoption of drought resistant varieties for specific cash crops. The project would support the technical and economic studies, the analysis of options and any assessments required by the Bank's safeguard policies.

The project will also support the formulation of an integrated planning for climate change exercise, at a location yet to be selected, that involves land use planning, including agriculture and forestry, water resources management and optimization, and, coastal zone management. This planning pilot will support efforts to develop integrated long-term adaptation plans of selected areas that involve water and land resources. The result sought includes the strategies identified during the process and the recommendations agreed through a transparent participation process with stakeholders. The planning exercise will include: a detailed description of the water cycle in the basin, including surface and ground water interactions, as well as fresh and ocean waters, land use activities and sea up-swelling, natural resources, natural hazard prevention and economic indicators. This activity will demonstrate a means of integrating global climate change in national plans, build institutional capacity, promote stakeholder participation, and create awareness among decision makers, the private sector and the population through dissemination of the results of the first component.

(ii) Support and coordination for the preparation of a regional agenda for adaptation and National Adaptation Programs of Action

While UNDP is expected to continue as the implementing agency in support of the 2nd National Communications of the Caribbean countries that will participate in MACC, the proposed project will assist with the integration of individual communications into a regional agenda for adaptation complementary to their national communications efforts and ensuring that the results of the project are clearly integrated into the second national communications. Activities supported under this component will include: (a) workshops/meetings for coordinators of national communications to facilitate exchange of experiences; (b) technical assistance for the development of a regional agenda; and (c) support for the development of a regional position on adaptation at the convention. The participating countries will ensure that the results of the project will be incorporated into National Communications and the National Adaptation Programs of Action (NAPAs), as recently mandated at the COP6. To this end, the focal points will constitute a Project Advisory Committee as was done under CPACC. The Project Advisory Committee will routinely review results and assess how these can best be reflected in the National Communications and NAPAs.

(c) Expanding and strengthening the existing knowledge base to facilitate Global Climate Change impact assessment as a basis for decision making on adaptation

Under this component, the following activities will be supported:

Strengthening the climate-monitoring network. All monitoring stations already installed by

CPACC will be integrated into global networks, both GCOS (Global Climate Observing System) and CREWS (Coral Reef Monitoring Network) as applicable. Their performance and reliability will be improved so as to increase their usefulness to the global climate and sea-level observing systems. Also, the geographic coverage and the scope of the measurements will be expanded to internalize lessons learned under CPACC and increase the applicability and reliability of the information. Climate and sea-surface temperature monitoring coupled with reef assessment will be carried out on national and sub-regional scales for the development of appropriate site-specific climate change scenarios for modeling purposes. The training and institutional capacity building required to execute these activities will also be addressed. A program aimed at actively promoting the use of the data produced by the monitoring stations will be designed and implemented. Active promotion of applications in the private sector will be pursued. Stations will be hardened to withstand extreme events, and the observations will be made available to the National Weather Services to help in their tropical storm and hurricane warnings and forecasting. Data will also be provided through NOAA to contribute to a comprehensive near real-time global change and weather information, an expansion of the CREWS network, which adds to the understanding of coral reef dynamics, and better coverage for satellite algorithm ground-truthing, which in turn will contribute to climate modeling in the region. The project will finance the required hardware, software, training and consulting services.

Adjusting resolution ("Downscaling") of global climate models in support of decision-making on adaptation at the country and regional level. Planning for adaptation to climate change in the Caribbean basin requires higher resolution climate change scenarios than those available from existing global climate models. The development of Regional Climate Models (RCM) will be pursued. This will enable more accurate projections of the potential impact of climate change at the level of individual Caribbean countries. These projections will then be used to: a) estimate impacts (reduced precipitation, changes in wind regimes, sea surface temperature); b) establish boundary conditions to the simulation of extreme weather events in the Caribbean, to determine the incremental impact of climate change on the wind, wave and surge hazards. Based on this work, sectoral planning and infrastructure agencies will be able to identify the most cost effective means to reduce vulnerability to climate change. Local capacity building and technology transfer will be encouraged by involving a group of Caribbean experts to address this issue. The project will finance the hardware, software and consultancy requirements.

Development of scenarios using different climate change projections. The project will support the development of Caribbean-scale climate scenarios as inputs for coastal hazard assessment models designed to analyze the vulnerability of coastal areas under climate-change-induced alterations in sea-level, sea surface temperature, and atmospheric circulation under different economic scenarios. This information will aid policy making on adaptation and thereby facilitate the mainstreaming of planning for adaptation. Local predictive models to support decisions on coastal vulnerability and risk assessment, as well as models of reef health and integrity will be developed. The project will finance the hardware, software and consultancy requirements.

Modeling of climate change impact on water and fisheries resources. The project will also support the analysis of the impact of global climate change on ground water behavior – saltwater intrusion, reduced supply of fresh water to coastal ecosystems, limited availability of freshwater for water supply, industry and agriculture. MACC will also support modeling

efforts to assist the fisheries departments to understand the impacts of shifting fishing grounds, impact on total stocks and the bleaching and death of coral reefs. In addition, economic valuation models of coral reefs to support mainstreaming and decision making strategies for vulnerability and risk assessment in such areas as fisheries management, coastal tourism, and infrastructure location will be developed. The project will finance the hardware, software and consultancy requirements.

(d) Cross-regional dissemination and replication

Under this component, the project will undertake activities to facilitate replication by disseminating results and lessons learned to other regions. Specifically, the project will support efforts aimed at disseminating Caribbean experiences in mainstreaming activities to Pacific island nations and other low lying states, and bringing outside experience to the region. The project will also support the development of information tools (webpage and newsletters) on the issue of mainstreaming adaptation to climate change. Active participation of the Pacific will be sought in developing these tools. This component will support the organization of international workshops on the issue of adaptation and will also provide resources for a public awareness campaign on the impacts of climate change in the region, targeted to the main economic sectors, the general public and key stakeholders outside of the region (foundations, NGOs, global climate change advocacy groups). The project will finance the required training, publications, workshops and consultancies associated with these efforts.

(e) Project management

This component will provide support for management activities by the Executing Agency, including monitoring and evaluation of project activities. The project will finance management costs in the form of consultancy services, training and travel.

Component		Indicative Costs (US\$M)	% of Total	Bank financing (US\$M)	% of Bank financing	GEF financing (US\$M)	% of GEF financing
1. Mainstreaming Adaptation		2.70	29.0	0.00	0.0	2.00	40.0
2. Formulation of measures (demonstration pilots) and regional agenda for adaptation		3.50	37.6	0.00	0.0	1.50	30.0
3. Expanded knowledge base for assessment of GCC impacts		2.10	22.6	0.00	0.0	1.20	24.0
4. Cross-regional Dissemination and Replication		0.30	3.2	0.00	0.0	0.10	2.0
5. Project Management		0.70	7.5	0.00	0.0	0.20	4.0
Total Project Costs		9.30	100.0	0.00	0.0	5.00	100.0
		0.00	0.0	0.00	0.0	0.00	0.0
Total Financing Required		9.30	100.0	0.00	0.0	5.00	100.0

Sustainability

Successful mainstreaming of climate change concerns into national and regional development planning will facilitate sustainability of the climate change agenda in the long-term. Activities in support of the adaptation agenda to climate change will be integrated into the mainstreaming of planning, as decision support mechanisms, and this is expected to facilitate its long-term sustainability. Public awareness and outreach activities will also help to build the institutional and political support needed to facilitate mainstreaming after project completion.

Capacity building of the regional institutional mechanism(s) for climate change, done as part of the project, will lay a foundation for the long-term sustainability of the project and increase the feasibility to replicate project activities throughout the region. From the broader perspective of the UNFCCC this project aims to serve as a pilot for Stage II Adaptation activities that could later be transferred to other regions and countries.

Stakeholders

The project is expected, as described before, to address mainstreaming issues of climate change into national and sector planning. Accordingly, a key interlocutor will be the Ministries of Planning. In addition, the planning offices of the line Ministries (water, agriculture, fisheries and land use) will also play an important role. These agencies have participated in the design issues of MACC through their representations to the meetings of the heads of Governments that have dealt with the inclusion of climate change in the development agenda of the region and will continue to be involved through their participation in national and regional stakeholder meetings as part of the regional consultations for the project.

Other important stakeholders, such as the scientific communities, the Ministries of Environment and clearly the Ministries of Finance and Foreign Affairs will be engaged in the preparatory meetings at the National level and in specific technical consultations during the design and implementation stages of the project. The Project Advisory Committee, which was successfully utilized for CPACC, will be used under MACC to ensure a forum for the involvement and guidance of CARICOM and official national representatives from each participating country. This Committee is expected to continue meeting at least once a year. Dissemination of the information and conclusions reached by the project will be included in the public dissemination and awareness campaign. The campaign itself will be designed to allow opportunities for public participation. The public awareness campaign will also have a strategy for dialogue and involvement of key politicians in the region. Stakeholders targeted under the public awareness campaign and involved in the consultation process will also include private sector representatives from key economic sectors, such as fisheries, real estate, banking and tourism. NGOs working in climate change in the region will also be engaged.

2. Key policy and institutional reforms to be sought:

The project seeks to ensure that climate change adaptation policies are articulated and mainstreamed into national planning. This is being sought through the formulation of approaches to adaptation for the vulnerable sectors in the region. As information on the impacts becomes more certain, results will be used to promote the formulation of integrated adaptation policies on an ongoing basis.

On the institutional front, the project seeks to build on the network of National

Implementation Coordinating Units (NICUs) and technical institutions geared to climate change studies developed under CPACC. It is anticipated that a key institutional development will be the strengthening of the institutional mechanism for managing climate change. An institutional analysis will be undertaken during preparation to clarify this institutional mechanism and the implementing arrangements for the project. The analysis will include an assessment of the institutional baseline (review of existing institutional assets, regulatory framework, mandates, skills), review of gaps from a climate change perspective, analysis of local conditions (restrictions and opportunities) review of alternatives, required institutional configuration to execute the activities of the project, exit strategy, review of approaches taken in other regions and countries and a recommendation. On a country basis, the project will seek further institutionalization of local arrangements aimed at integrating climate change into national development planning (e.g. national climate change committees, sustainable development councils).

3. Benefits and target population:

The beneficiaries of the project include a wide cross-section of the population in the region including government decision-makers and technical personnel, the private sector (including productive sectors such as tourism, fisheries, agriculture and forestry) and the wider public (for example, through improved water resources management). The primary benefits of the project will be institutional, particularly through the development of greater capacity to address climate change and provision of assistance to the countries to develop and maintain adaptation tools such as vulnerability assessments, coral reef monitoring, spatial analysis and planning and the use of economic tools for decision-making.

Specifically, the project will lead to:

- Improved capacity in the design, implementation and revision of adaptation policies and responses;
- A more coordinated approach to addressing climate change issues at the sub-regional and regional level;
- Improved data sets for utilization in the development of regional climate scenarios;
- The provision of relevant data/information for informing adaptation policies; and
- Increased involvement of stakeholders through the process of comprehensive public awareness and education programs.

Target Population

General

Primary beneficiaries will be national governments and agencies as well as coastal populations - populations and all other stakeholders vulnerable to climate variability and the effects of climate change (such as farmers). NGOs and private sector organizations will also benefit from additional training and information from project activities. National and regional agencies will benefit through strengthened capacity to manage national and regional aspects of climate change adaptation policy; technical training; improved cooperation and relationships between regional bodies and agencies addressing disaster preparedness and sustainable development; and greater availability of replicable models for adaptation policy development and implementation.

National Governments

Specifically, national governments will benefit from:

- Adaptation policies and response mechanisms for vulnerable sectors such as tourism, agriculture and forestry, fisheries and water resources.
- Improved climate modeling for application in small states;
- Effective adaptation tools; and
- Improved technical capacity in the areas of land-use planning, risk management and climate forecasting.

Coastal residents

Sixty percent or more of the approximately 5.2 million people living within the Caribbean live within a five-mile radius of the coastal zone and as such are vulnerable to climate change and extreme events. In some cases (such as Guyana), 90% of the population lives on the coastal plain. The implementation of this project, which seeks to reduce the environmental, physical and economic vulnerability of Caribbean SIDS to climate variability and change, would benefit these vulnerable sectors of the population.

4. Institutional and implementation arrangements:

Institutional and implementation arrangements are under discussion pending the results of an institutional analysis expected to be completed during project preparation. The terms of reference for the institutional analysis are attached in Annex 11.

The Caribbean Climate Change Center would be one possible institutional mechanism to support and maintain on a long-term sustainable basis, the program of action on climate change adaptation for the Caribbean, as defined by the regional position before the Conference of Parties and the meeting of the Subsidiary Bodies on Science and Technology to the United Nations Framework Convention on Climate Change. As currently envisioned the Center will be a CARICOM agency with independent management. Although the CCCC is being designed and funded without GEF support, it is being explicitly designed for the purpose of implementing climate change activities in the region. (See Annex 6 for information on the CCCC.). Alternative institutional arrangements may include using an existing institution or a combination of institutions. Also under consideration is the need for a permanent institution as opposed to a transitional arrangement with time-bound, results oriented set-up to undertake activities that other agencies might not be able to undertake in the initial stages of the project. These and other arrangements will be further explored during project preparation as part of the institutional analysis.

D. Project Rationale

1. Project alternatives considered and reasons for rejection:

Regional versus National Approach

Global climate change is the most important environmental challenge to sustainable development, this century. It has been recognized as such by the United Nations, the European Union, and the global

scientific community at large. CARICOM countries are small islands and low-lying coastal states with limited national capacity and resources to address this serious environmental challenge by themselves. Individually, these countries lack the critical mass of skills required to effectively address these challenges and must resort to a regional approach to meet the challenge of global climate change and its impacts in their nations. Thus the implementation of activities at the national level was not considered as an option, a decision validated by the success of CPACC in establishing a cooperative regional network of institutions and personnel to address climate change issues in the region. The success of the CPACC approach has provided a good basis for maintaining the current framework and ensuring the sustainability of that process.

In the process of defining MACC it is proposed to carry out a series of National and Regional consultations with stakeholders, thus ensuring that, though likely implemented through a regional institution, the elements in the MACC program will reflect national priorities and build capacity for climate change adaptation. Under the Clean Development Mechanism (CDM) for example, a regional approach to determining baselines and identifying projects eligible for CDM funding seems to be the only viable option for ensuring that small states benefit from investments under this mechanism. It is very unlikely that individual countries will attract the investment required under the CDM.

An approach based on a regional framework is also more effective for disseminating and replicating the lessons developed during the implementation of country specific pilot projects under CPACC. The regional approach also facilitates through the established network of National Implementation Coordinating Units (NICUs) a more cohesive approach to international negotiations under the UNFCCC, and the harmonization of policies dealing with climate change impacts on sensitive sectors such as tourism, agriculture and forestry, fisheries and water resources.

Adaptation versus Mitigation

All but one CARICOM country have completed the compilation of their First National Communications and have reflected in these reports the need to focus on adaptation to the likely impacts of climate change. Being low green-house gas (ghg) emitters, the question of mitigation of emissions was not considered as a priority. However, to the extent that adopting certain actions to aid mitigation can contribute to the sustainable development goals of the region, these will be undertaken. Thus under MACC opportunities for such actions under the umbrella of the CDM, such as capacity building, developing a regional approach to establishing baselines and benchmarks, and assisting countries to reduce transaction costs in the formulation of projects to develop their renewable energy resources, will be exploited. Further, the recent landmark agreement in Bonn (COP6) has resulted in a strong endorsement for adaptation activities in vulnerable regions.

Institutional basis for the project

Alternative institutional mechanisms that will be considered for the execution of MACC include: (i) using UWICED as an executing agency; (ii) continuing the current arrangements, with the Regional Project Implementation Unit (RPIU) dependent on the OAS; (iii) using an established regional institution as executing agency; or (iv) using the newly proposed Caribbean Climate Change Center (CCCC) which is supported by the Canadian Government.

Selection of the institutional mechanism will be the result of an institutional analysis and a consultation process in the region. The institutional analysis is underway under terms of reference

described in Annex 9. The process and a decision will be finalized before appraisal of the project (by February 2001). A decision on the institutional mechanism of the project will also be taken prior to appraisal. The financial and management assessment will be undertaken after a decision has been taken on the institutional mechanism but prior to completion of appraisal.

For the implementation of CPACC, a RPIU was established in Barbados under the aegis of the University of the West Indies Center for Environment and Development (UWICED). It was anticipated that, at the end of the project, UWICED would assume institutional responsibility for the future climate change work in the region. However, during the course of implementation of CPACC it became evident that there were limitations in the University Administrative system. CPACC's success is built on the effectiveness of the National Implementation Coordinating Units and their interface with the RPIU. This required a more responsive environment than that provided by the University for the RPIU to operate in. In addition, the University's interests and priorities reflect the needs of the academic environment, and not necessarily those of the countries participating in a regional development program. The university remains however, one of the key regional institutions, and will be an important member of the articulated network of institutions dealing with climate change in the region and for ensuring that, through regional institutions including the three campuses of the University of the West Indies and the University of Guyana, everyone is effectively involved in the implementation of climate change programs in the region.

Project versus Programmatic Approach

Through the implementation of CPACC, regional governments have come to the realization that the challenges posed by climate change are pervasive and of a long-term nature. Responding to these challenges requires a long-term commitment of resources. Such a commitment will ensure that, over a period of time as climate change sciences mature, climate change adaptation policy is fully integrated into national planning and governments are able to make definitive policy interventions to facilitate adaptation to climate change. While MACC is a follow-up project to CPACC, during its implementation, a long-term program based approach will be assessed.

Linkages with Other Environmental Institutions

The executing agency will establish strategic linkages with existing environmental institutions in the region, acting as focal point and coordinator for climate change issues. As such, the executing agency will not "compete" with the work programs of these institutions, but rather will complement their ongoing work. In fact, the executing agency will assist the other environmental institutions in integrating climate change into their own agendas, and will providing opportunities to carry out specialized tasks within programs and projects.

The executing agency for MACC, will support vulnerability assessment and adaptation to climate change in the vulnerable sectors in the region. In this work, the executing agency will involve specialized regional agencies such as the Caribbean Environmental Health Institute (CEHI) to handle water and environmental health issues, the Caribbean Tourism Organization (CTO) to address the impact of climate change on tourism, the Caribbean Agricultural Development Institute (CARDI) for adaptation to climate change in agriculture and land use, and the Caribbean Disaster and Emergency Response Agency (CDERA) for linkages between vulnerability to natural hazards and climate change. A regular working relationship will be established with the Caribbean Conservation Association (CCA) to ensure effective communication and outreach to the NGO community in the Caribbean, and to promote their participation in project activities. To ensure an efficient interface with other regional and specialized institutions, a

coordination meeting on MACC with all these institutions will be organized before project appraisal. Conclusions and recommendations will be integrated into the design of the project.

Collaboration with other GEF Projects

For GEF projects in preparation, the CPACC/MACC team will coordinate with project executors and sponsors to ensure that potential overlap is addressed at the earliest opportunity and to agree upon a methodology/mechanism for cooperation and collaboration on areas of mutual interest. This may be achieved through discussions and/or participation in project development meetings.

During project preparation for MACC, opportunities for cooperation and collaboration with projects already approved or in implementation will be explored. Of particular interest are in projects that have sector-specific public awareness and education and training and technology transfer activities with that coincide or complement those in MACC. Already the team has begun to explore concrete opportunities for collaboration with other GEF projects in the region, namely the Integrated Water and Coastal Resources project for the Wider Caribbean currently being coordinated by UNEP, UNDP and CEHI.

Moreover, upon the approval of MACC, the executing agency will strive to develop protocols of cooperation with other projects/activities and organizations in the region. Specifically in the case of the IWCAM project, a Coordination Protocol has been agreed to between the executing agencies (World Bank for MACC) and UNEP/UNDP for IWCAM) that provides the basis for exchange of information and coordination. The Coordination Protocol is summarized in Annex 11.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned).

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed			
Climate change vulnerability assessment, adaptation planning and related capacity building.	Caribbean Planning for Adaptation to Global Climate Change Project (GEF).	S	S
Mitigation of adverse effects of natural disasters through institutional strengthening and infrastructure support.	OECS Emergency Recovery and Disaster Management Program (Dominica, Grenada, St. Kitts & Nevis, St. Lucia and St. Vincent) (IBRD).	S	S
Restoration of agricultural capacity in drought-stricken areas; vulnerability reduction measures; flood protection and restoration of water supplies in low-lying areas.	Guyana El Nino Project (IBRD).	S	S

Improvement of potable water supply and sanitation services; reduction of vulnerability to hydrologic extremes; modernization of water sector policy and institutional framework.	Guyana Water Supply Technical Assistance and Rehabilitation Project (IBRD).	S	S
Management of wastes, coastal and marine resources, capacity building.	OECS Solid Waste Management Project (GEF;IBRD;IDA;CDB;EIB;EU;OECS)	S	S
Rehabilitate hydraulic infrastructure of priority watersheds; strengthen government capacity for environmental management and flood preparedness	St.Lucia Watershed and Environmental Management Project (IBRD).	S	S
Finance rehabilitation needs; provide framework for overall coordination and implementation of reconstruction program	Jamaica: Emergency Reconstruction Import Loan (IBRD).		
Barrier reef protection, coastal zone management, institutional strengthening and harmonization of national policy frameworks.	Mesoamerican Barrier Reef Project (GEF).		
Other development agencies			
Climate change enabling activity support to Caribbean countries for preparation of first National Communications (with exception of St. Vincent and the Grenadines under CPACC).	Caribbean: Climate Change Enabling Activity Projects (UNDP;UNEP;GEF).		
Testing and improvement of methodologies and guidelines through a series of country studies for assessing climate change impacts and adaptation.	Global/Antigua and Barbuda: Country Case Studies on Climate Change Impacts and Adaptations Assessment - Phase I (UNEP;GEF).		
Capacity building, training and institutional strengthening for development of national strategies for implementation of UNFCCC.	Global: Climate Change Training Phase II - Training Program to Support the Implementation of the UNFCCC (UNDP;GEF).		
Information exchange and technical assistance for preparation of initial national communications.	Global: National Communications Support Program (UNDP;UNEP;GEF).		
National/regional studies and capacity	Global: Assessment of Impacts		

building to assess climate change impacts on socioeconomic sectors and ecological systems for development of adaptation response options.	and Adaptations to Climate Change in Multiple Regions and Sectors (UNEP;GEF).		
Disaster mitigation in housing and infrastructure.	Caribbean Disaster Mitigation Project (USAID).		
Development of national, long-term integrated island management and sustainable development strategies throughout the sub-region and within the context of GEF operational program 12.	Implementation of an Integrated Archipelagic ecosystem management and sustainable development program for the Eastern Caribbean (UNDP-OECS PDF-B Proposal)		
Coastal and marine resources capacity building.	Caribbean Regional Oceans and Fisheries Program (CROFP), Fisheries Resource Assessment and Management (CIDA).		
Disaster preparedness in the health sector.	Caribbean Hospital Mitigation and Mass Casualty Training (PAHO)		
Rehabilitation and Disaster Preparedness	Belize Hurricane Rehabilitation and Disaster Preparedness (IADB)		
Post-hurricane Reconstruction and Disaster Preparedness	Belize Emergency Reconstruction Facility Following Hurricane Keith (IADB)		
Post-hurricane Reconstruction and Disaster Preparedness	Dominican Republic Reconstruction and Improvement in the Wake of Hurricane Georges (IADB)		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in proposed project design:

The preparation team has drawn on the experience and lessons learned from other GEF supported climate change projects and enabling activities, as well as related projects funded by the Bank and other development agencies, in order to improve project design and benefit from best practice.

One of the central lessons learned and reflected in MACC project design has to do with the fundamental need to *mainstream climate change issues into national sustainable development strategies via selected sectors directly affected and with high social and economic impact*. Despite good progress made under CPACC and other projects in technical capacity building and institutional

strengthening, climate change issues still are not generally a part of the mainstream policy dialogue at the national level. To this end, MACC has been designed to broaden and deepen capacity building efforts with stakeholders in local communities and key sectors for the incorporation of climate change impact and risk assessment into their ongoing development planning and investment decisions. Public awareness activities will also be intensified to further sensitize the general public about the relevance of climate change issues to their daily lives and to build political support for adaptation planning efforts.

A related issue is *the need to expand climate change monitoring and impact assessment as a basis for national and regional decision making*. Previous work in this area has underscored the need for region-specific climate models for the Caribbean in order to make more accurate projections about climate change impacts in individual countries. To this end, MACC will support the downscaling of global climate models, as well as the further development of data applications relevant to the design of national adaptation activities and sectoral planning. Vulnerability assessments will also be expanded from a focus on coastal management issues to water resources and agricultural impacts of climate change.

Other regional projects have underscored *the importance of an effective regional coordination mechanism* to address system-wide transboundary issues. CPACC has been instrumental in the establishment of a regional network of national government agencies, private sector representatives and regional institutions addressing climate change and the effect on economic, social and cultural development in the Caribbean region.

Finally, in order to effectively mainstream climate change into development planning, *strong national institutions such as the finance, planning, economic ministries and line agencies must be involved*. Keeping the climate change agendas within the environmental agencies has not been effective at mainstreaming these issues into policy decisions. The project will facilitate dialogue between line agencies, finance ministries and environment ministries to include climate change considerations in their respective agendas.

4. Indications of borrower and recipient commitment and ownership:

At the national level, the draft initial national communication reports from CARICOM countries propose support for a the regional approach, taken by MACC, to continue capacity building and technical assistance in the area of climate change. They are also supportive of efforts to continue the adaptation process. National development plans have indicated the need to focus on sustainability and address challenges to long-term development prospects. At the regional level, the CARICOM Heads of Governments approved a resolution during their last meeting in July 2000 authorizing the present implementation team for CPACC (CARICOM, UWICED, OAS and the World Bank) to submit a request to the GEF to support the development of a full proposal to continue the process of adaptation. The CARICOM Heads of Government also endorsed a resolution calling for the establishment of institutional capacity to champion adaptation policies and to coordinate climate change activities in the region. Furthermore, the topic of climate change remains of high priority to the Caribbean SIDS.

All participating countries have ratified the United Nations Framework Convention on Climate Change (UNFCCC) and have been full participants in the implementation of the CPACC project. Under the latter project, governments have committed resources for its implementation through identification of a National Focal Point and establishment of a National Implementation Coordinating Unit. Some countries have established cross-sectoral national climate change committees that have been actively involved in implementing CPACC activities such as vulnerability assessments, coral reef monitoring, national climate change adaptation policies and coastal resource inventories.

Under the UNDP Enabling Activities project, all the participating countries (with the exception of St Vincent and the Grenadines) are in the process of preparing their first National Communications. St Vincent and the Grenadines completed their's under the CPACC project. This, along with National Communications from Grenada and Jamaica, were submitted to the UNFCCC secretariat at COP6. All of these communications identify adaptation as a high priority issue for the region, support the regional approach adopted for the implementation of CPACC and the establishment of the regional Climate Change Center. The region participates in meetings of the Convention (COP and SBSTA), and through CPACC has been attempting to articulate a regional position at these international fora. The region also now plays an important role in shaping the climate change debate in its special interest groupings-- AOSIS and G77 and China.

Through an interface with CPACC, PETROTRIN (the Petroleum Company of Trinidad and Tobago) has supported climate change activities in the region and has recently established an in house climate change institute to advise the industry on actions which they need to take for compliance with some aspects of the UNFCCC. One country, St Lucia has declared that they will pursue a policy of a totally non-fossil fuel based economy and is already taking steps to implement this initiative. Further, under CPACC all countries are committed to developing a National Climate Change Adaptation Policy and Implementation plan and adopting these formally at the national level.

5. Value added of Bank and Global support in this project:

The World Bank's involvement in MACC provides the recipient with access to experience in other regions, notably the Pacific Islands' proposed adaptation efforts and the sector work on adaptation on low lying areas (Bangladesh for example) and support for the development of policies and regulations on climate change. The Bank's growing experience with regional institutional mechanisms (offices on climate change in Colombia and Mexico for example) will be useful in the discussions and agreements underway on institutional issues. Likewise, the sector work on optimization of participation in the Clean Development Mechanism, undertaken under the National Strategic Studies partnership (in Colombia, Argentina, Bolivia, for example) will be useful in the discussions leading to adoption of regional positions at the Conference of Parties. The Bank's successful experience with CPACC provides continuity and institutional memory to the new project. **Additionally, the Bank will gain from involvement in the project. The sectoral approach of the project will provide a model that the Bank can use to mainstreaming adaptation into its operations. This will be done through active promotion of the project results through presentations and publications and through the project's contributions to sector strategies and CAS development.**

E. Issues Requiring Special Attention

1. Economic

Summarize issues below To be defined None

Economic evaluation methodology:

- Cost benefit
- Cost effectiveness
- Incremental Cost
- Other (specify)

The project is an enabling activity (as are all Stage II activities) and therefore, incremental costs are equal to the full project costs and an incremental cost analysis is not necessary.

The project will fund the formulation of subprojects designed to demonstrate a practical application of climate change adaptation that can be replicated and integrated into national policy and development planning. These projects will be chosen from submissions from participating countries based on, among other things, cost-effectiveness. Procedures for proposal preparation, including the calculation of cost-effectiveness will be developed during project preparation and included in an operational manual.

2. Financial

Summarize issues below To be defined None

The financial plan for the project relies exclusively on grants from the GEF under the enabling activities window, and from CIDA grants through the CCCDF. Therefore, there are no issues of financial cost recovery. Government contributions will be provided through the time of experts and the use of local facilities.

The development of a Financial and Management Reporting System for the executing agency will be required to comply with fiduciary guidelines. The Canadian Climate Change Fund will assist in the assessment of gaps, formulation and implementation of the system. This work will be done under close coordination and supervision of the Bank's financial experts.

The project will develop a comprehensive financial and contract management system for the executing agency, which incorporates the reporting requirements of both the Bank and CIDA. The system is being developed for future expansion and enhanced capability, such as multiple-currency reporting, linking project monitoring and evaluation indicators to financial results, etc. The system is being developed with the intention of being assessed and meeting the Bank's requirements for PMR disbursements, but being flexible to incorporate future reporting requirements (as needed), and the Canadian Climate Change Fund will assist in the assessment of gaps, formulation and implementation of the system. This work will be done under close coordination and supervision of the Bank's financial management and project management specialists.

Operational and administrative procedures will also be developed to ensure that the proper internal controls, to safeguard the integrity of the system, are established and followed, and that the transparency of the system is maintained in a multiple-user environment. The system is expected to be able to manage all contract and procurement processes and to record and report all (financial) sources of funding for the new center.

The long-term financial sustainability of the executing agency needs to be ascertained. The assessment of this is an integral part of the institutional selection process. To this effect, CIDA is assessing a series of options and assisting in the preparation of a solid business plan. Different sources of financing are described in Annex 6.

3. Technical

Summarize issues below To be defined None

Expansion of the monitoring network.

The existing CPACC monitoring network was designed in 1997 as a long term sea-level and meteorological trend monitoring system. At the time this system was designed and procured it was the best technology

available. The network is operating satisfactorily, but is vulnerable to failure. The main vulnerability is the lack of maintenance, which exacerbates problems of normal wear due to the age of the equipment. This wear is largely seen in the form of "drift" in electronic equipment. The other vulnerability is damage caused by extreme events. The network needs to be enhanced to include measurements that will complement direct readings on sea level and sea surface temperature.

To address these problems, the following measures will need to be considered for implementation under MACC:

- Update equipment with new technology and by adding optional attributes that have become available since the equipment was procured in 1997.
- Introduce a system of early replacement of selected sensors.
- Improve maintenance by strengthening the training of national staff, especially in the smaller countries.
- Strengthen the equipment to reduce damage from hurricanes.

The specific upgrades to be considered in the project are:

<u>Upgrade</u>	<u>Problem Addressed</u>
GPS Timing module	Eliminates time drift
PCMCIA Data Storage module	Eliminates data loss due to communications interruptions
EEPROM/Firmware upgrade	Allows other hardware upgrades and implements tsunami and wind processing
Voice synthesis module	Adds voice reports over telephone & radio
Modem module	Allows remote problem resolution and provides emergency notification
Data delivery radio system	Delivers data to local remote users
Pyranometer & PAR light sensors	Provides information that are important to coral reef research
Add tower height, raise DCP and add guy wire systems (not possible at all sites)	Strengthens sites against storm damage
Add selected GPS-CORS at existing monitoring sites	Brings monitoring network up to present global sea-level monitoring standards

Linkage with other monitoring networks.

In addition , the linkages with GCOS, NOAA and GLOSS need to be clarified to ensure compatibility and maximum efficiency. This design of the monitoring network will be undertaken during project preparation with assistance from NOAA staff and representatives from GCOS.

Definition of downscaling protocols.

There is wide consensus on the advantages of downscaling of global models; however, there is less certainty on the instruments that should be used. During project preparation, clarification of the issue will be sought with technical experts in the region and elsewhere. The suitability of tools for downscaling of specific global models to the required scale needs to be assessed. This will be done prior to appraisal.

Formulation of scenarios.

The formulation of scenarios will require considerable effort and the availability of suitable modeling tools. This will be pursued during project preparation, on the basis of the modeling tools being developed under the aegis of the Intergovernmental Panel on Climate Change (IPCC).

4. Institutional

There is a multiplicity of organizations, particularly CARICOM organizations, with relatively weak capacity in already-existing institutions. The role of the various institutional alternatives vis a vis the existing institutions and necessary linkages will be discussed during project preparation.

A baseline assessment of institutional capacity in natural resource management and planning is required. It will be undertaken during project preparation as part of an institutional assessment. During preparation, an assessment will be made of the linkage among existing institutions such as CDERA, NRMU, CEHI to ensure coordination of agencies and avoidance of duplication of efforts. A coordination meeting with these and other relevant regional institutions is being scheduled to address coordination and cross-support mechanisms. The coordination meeting will also be attended by CARICOM and member government officials. The meeting is being tentatively scheduled for November 2001. The agenda for this meeting will include:

- Identification of roles and mandates in the climate change arena;
- Identification of opportunities for cooperation;
- Preparation of a coordination protocol;
- Identification of synergies amongst institutions;
- Agreement on roles and opportunities in the context of the MACC project;
- Development of a plan of action to minimize any institutional overlaps and maximize the use of institutional assets;
- Formulation of lessons for use in institutional capacity, elsewhere in the region.

4.1 Executing agencies:

An institutional analysis is being commissioned to review alternatives and make a recommendation on the executing agency. The analysis will be undertaken during preparation to clarify the institutional arrangements, which will include analysis of the institutional baseline (review of existing institutional assets, mandates, skills), review of gaps from a climate change perspective, analysis of local conditions (restrictions and opportunities) review of alternatives, required institutional configuration to execute the activities of the project, exit strategy, review of approaches taken in other regions and countries and a recommendation.

The OAS is the executing agency for the PDF-B and it is anticipated that it will continue to provide technical support in selected areas, under a contractual arrangement with the project executing agency.

4.2 Project management:

The executing agency will operate as an articulated network of regional institutions and will act as the coordinator of joint activities in the area of climate change. As a focal point for climate change issues in the region, it will attract funding and other resources to strengthen the region's capacity.

At the national level, the National Implementation Coordination Units, created during the CPACC Project will be expected to continue to play a critical role in ensuring effective implementation and sustainability at the national level as well as to participate effectively in regional activities and contribute to intra-regional and international discussions.

Project execution is expected to be shared and carried out in a collaborative framework and will involve partnerships at the regional and international level (with partners such as NOAA, OAS and PICCAP, IWCAM).

4.3 Procurement issues:

Procurement will be overseen by the executing agency and will be in accordance with World Bank guidelines.

4.4 Financial management issues:

The executing agency will be responsible for the financial management and accountability of project execution. Through the relationship of the RPIU with the OAS during the execution of the four-year CPACC project, acceptable operational and administrative procedures have been established and maintained to ensure effective financial accounting. These procedures will be further reviewed and revised as needed during MACC project preparation. (See section on financial issues.)

5. Environmental

5.1 Summarize significant environmental issues and objectives and identify key stakeholders. If the issues are still to be determined, describe current or planned efforts to do so.

As the project is an environmental project, the major environmental effects are expected to be beneficial. However, there may be some very minor impacts as a result of project activities. In order to assess the impact of climate change on the natural resource base of the region, an overall, qualitative, environmental assessment of these impacts will be prepared as part of the project activities. The project will also contribute to the inclusion of climate change concerns into national EIA processes and procedures.

The formulation of the pilot adaptation projects (no implementation of pilots is considered under stage II adaptation) will include procedures for environmental screening based on potential impact, environmental impact analysis and design and implementation of environmental management plans where applicable. The procedures will also assess compliance with any applicable safeguard policies. These will be developed during project preparation and included in an operational manual.

Further, the project will support the development of a sectoral vision of the environmental issues involved in the selection of adaptation options through an environmental evaluation of alternatives. For example, if sea level rise is the issue in a specific area, rather than plunging directly into support for design or redesign of adaptation options, the project will support the consideration of a range of options, and consider all of them from an environmental point of view. Hence, the project will assist in the identification of environmental and social tradeoffs for the different options.

As a result of global climate change, over the medium to long-term major changes in sea level, hydrological regimes, vegetation cover, and agricultural patterns, are anticipated that could be

considered to have major environmental impacts. For example, changing patterns of agricultural use and rise in sea level could have major impacts on natural habitats and could potentially displace a significant portion of the population in some countries. In this context, the project will contribute to address more explicitly the question of assisting the countries in adapting national planning frameworks to take into account environmental and social impacts arising from climate change.

5.2 Environmental category and justification/rationale for category rating: **B - Partial Assessment**

The project has a proposed environmental category rating of B due to the inclusion of funding for studies to assess subprojects (pilot adaptation projects) that are not likely to be known at the time of appraisal and could potentially involve projects that have mitigable environmental effects. However, actual funding for implementation of these activities is not part of the project.

5.3 For Category A and B projects, timeline and status of EA

EA start-up date: August 2001

Date of first EA draft: January 2002

Expected date of final draft: February of 2002

5.4 Determine whether an environmental management plan (EMP) will be required and its overall scope, relationship to the legal documents, and implementation responsibilities. For Category B projects for IDA funding, determine whether a separate EA report is required. What institutional arrangements are proposed for developing and handling the EMP?

As part of the pilot demonstration project preparation procedures, EMPs will be developed for any project that will need to implement mitigation measures.

5.5 How will stakeholders be consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed EMP?

Although the pilot adaptation projects are not expected to have any significant environmental impacts, in the event they do, consultation on the EA and EMP will be done. This will be included in the procedures for formulation of these subprojects.

5.6 Are mechanisms being considered to monitor and measure the impact of the project on the environment? Will the indicators reflect the objectives and results of the EMP section of the EA?

The EA will develop monitoring indicators as appropriate.

6. Social

6.1 Summarize key social issues arising out of project objectives, and the project's planned social development outcomes. If the issues are still to be determined, describe current or planned efforts to do so.

There are expected to be no negative social impacts resulting from the proposed project. Certain stakeholder groups, especially poor local communities and the various indigenous peoples of the region, may be more vulnerable to climate change impacts on disaster management, fisheries, agriculture and freshwater resources, and have differential access to response mechanisms and other expected project benefits. During project preparation, a social analysis will be conducted to fully assess the key social issues and expected social development outcomes in relation to the proposed project. The social analysis start up date will be October 2001 with the first draft expected to be completed in January 2002. A final draft will be completed by appraisal.

6.2 Participatory Approach: How will key stakeholders participate in the project?

The project is expected to address mainstreaming issues of climate change into national planning. Accordingly, a key interlocutor will be the Planning Ministries. In addition, the planning offices of the line Ministries (water, agriculture, fisheries and land use) will also play an important role. These agencies have participated in the design issues of MACC through representation at the meetings of the heads of Governments dealing with the inclusion of climate change in the development agenda of the region and will continue to be involved through their participation in national and regional stakeholder meetings as part of the regional consultations for the project.

Other important stakeholders, such as the scientific communities, the Ministries of Environment and the Ministries of Finance and Foreign Affairs will be engaged in the preparatory meetings at the national level and in specific technical consultations during the design and implementation stages of the project. The Project Advisory Committee initiated under CPACC will continue to ensure a forum for the involvement of CARICOM and official national representatives from each participating country. This Committee is expected to continue meeting at least once a year.

The information and conclusions reached by the project will be included in the public dissemination and awareness campaign. The campaign itself will be designed to provide opportunities for public participation. The public awareness campaign will also have a strategy for dialogue and involvement of key politicians in the region. Stakeholders targeted under the public awareness campaign and involved in the consultation process will also include private sector representatives from key economic sectors, such as fisheries, real estate, banking and tourism. NGOs working in climate change in the region will also be engaged. Initial contacts have already been made with representative NGOs and this practice will continue.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

NGOs working on climate change and related sustainable development issues will participate in project design and implementation through representation on the Project Advisory Committee, and through involvement in capacity building, training and planning activities under the proposed project. Various NGOs and civil society representatives have participated in CPACC. Their continuing participation during the preparation stage of MACC (and its actual implementation) will be encouraged.

6.4 What institutional arrangements are planned to ensure the project achieves its social development outcomes?

TBD

6.5 What mechanisms are proposed to monitor and measure project performance in terms of social development outcomes? If unknown at this stage, please indicate TBD.

TBD

7. Safeguard Policies

7.1 Do any of the following safeguard policies apply to the project?

Policy	Applicability
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Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> TBD
Natural Habitats (OP 4.04, BP 4.04, GP 4.04)	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> TBD
Forestry (OP 4.36, GP 4.36)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> TBD
Pest Management (OP 4.09)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> TBD
Cultural Property (OPN 11.03)	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> TBD
Indigenous Peoples (OD 4.20)	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> TBD
Involuntary Resettlement (OD 4.30)	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> TBD
Safety of Dams (OP 4.37, BP 4.37)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> TBD
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> TBD
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)*	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> TBD

7.2 Project Compliance

(a) Describe provisions made by the project to ensure compliance with safeguard policies which are applicable.

During preparation, policies that may be triggered including the possible need for an IPDP or resettlement planning will be ascertained. Environmental and social issues will be taken into account in the preparation of feasibility studies of pilot projects and in the design of any other investment projects financed by the project. Compliance with the Bank's safeguard policies will be addressed in the EA and in the social analysis to be carried out during project preparation and in the design of screening mechanisms, operational manuals, training programs and other mechanisms the project promotes.

(b) If application is still to be determined, describe current or planned efforts to make a determination.

8. Business Policies

8.1 Check applicable items:

- _ Financing of recurrent costs (**OMS 10.02**)
- _ Cost sharing above country 3-yr average (**OP 6.30, BP 6.30, GP 6.30**)
- _ Retroactive financing above normal limit (**OP 12.10, BP 12.10, GP 12.10**)
- _ Financial management (**OP 10.02, BP 10.02**)
- _ Involvement of NGOs (**GP 14.70**)

8.2 For business policies checked above, describe issue(s) involved.

A financial management assessment will be performed prior to or during the appraisal mission by a Financial Management Specialist (FMS) from LCOAA. Sufficient time and resources have been allocated for the FM Assessment.

Under a separate initiative the GEF, possibly through UNDP will be financing a medium size grant for NGO involvement in adaptation. At this moment this initiative has yet to be defined by the project sponsor (World Resources Institute). As soon as it is viable, the activities under both projects will be coordinated.

F. Sustainability and Risks

1. Sustainability:

Successful mainstreaming of climate change concerns into sectoral, national and regional development planning will facilitate sustainability of the climate change agenda in the long-term. Activities in support of the adaptation agenda to climate change will be integrated into planning activities, as decision support mechanisms, and this is expected to facilitate its long-term sustainability. Public awareness and outreach activities will also help to build the institutional and political support needed to facilitate mainstreaming after project completion.

The adoption of a suitable institutional mechanism to address climate change along with associated capacity building activities will form an important foundation for the long-term sustainability of adaptation activities initiated under the project and will enhance the feasibility of replicating project activities throughout the region. From the broader perspective of the UNFCCC this project aims to serve as a pilot for Stage II Adaptation activities that could later be transferred to other regions and countries.

2. Critical Risks (reflecting the failure of critical assumptions found in the fourth column of Annex 1):

Risk	Risk Rating	Risk Mitigation Measure
From Outputs to Objective		
Availability of supporting institutional and technical infrastructure	S	Prerequisite for country participation in project. Sectoral capacity building planned
Continued socio-economic and political stability	N	Minimize direct economic cost of governments in project. De-politicize project implementation.
Continued commitment by governments and personnel to the project and the process	N	High level participation by CARICOM, COTED and Participating Governments in the Project Advisory Committee and project activities.
Strategy-making process is open to change and flexible to address the changing nature of climate change issues	H	Awareness building on need for flexible policy making and strategy process.
The CPACC pilot countries involved are committed to assisting the other countries in using the decision-making tools.	S	Provide incentive to promote continued engagement in CC dissemination
Utilization of eligibility criteria, rules, and methodology of modeling and operation tools	H	Education campaign on methodological and operational implementation. Enact policy on operationalization of methodology.
Technicians needed for national and regional offices are available in respective localities.	M	
From Components to Outputs		
Administrative framework for timely disbursements of financial resources to project.	S	Business, implementation, operations plans/manuals.
Transparency in the administration of	M	Key competent financial administrator and

financial resources.		financial management system in place.
Availability of counterpart funding according to projections	M	MOU of CARICOM, center host & other countries regarding participation in the project.
Availability of appropriate institutional mechanism for execution of project activities	H	Close coordination and follow up with CIDA (CCCCDF) and CARICOM. Provision of specialized management assistance, during project preparation. Completion of Institutional Analysis.
Availability of co-financing resources.	N	Close coordination with CIDA, other potential partners.
Effective coordination with IWCAM project.	M	Dialogue with CARICOM to promote application of the coordination protocol.
Financial sustainability of the institutional mechanism in the medium term	H	The financial sustainability of the executing agency over the duration of the project will be assessed during project preparation. The institutional analysis will address all institutional aspects including the issue of financial sustainability. The CCCC, as one of the alternatives being examined is being designed as a lean and executive institution with relatively small or nonexistent overheads. A business plan and an assessment of financing options are being prepared by CIDA, that will address issues of long-term sustainability.
Overall Risk Rating	S	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N(Negligible or Low Risk)

G. Project Preparation and Processing

1. Has a project preparation plan been agreed with the borrower (see Annex 2 to this form)?

Yes - date submitted: 05/01/2001 No - date expected:

2. Advice/consultation outside country department:

- Within the Bank: Climate Change team. Peer reviewers were M. Hatzios and S. Bettencourt.
- Other development agencies: Close consultation is planned or has already started with Canadian Climate Change Fund (CIDA), the Dutch Partnership Facility, the French Government, the National Oceanic and Atmospheric Administration (NOAA), GCOS (Global Climate Observation System, GLOSS (Global Ocean Survey System), the Organization of American States and others.
- External Review GEF STAP Reviewer (B. Singh).

3. Composition of Task Team (see Annex 2):

The task team leader is W. Vergara. The task team includes Mark Austin, Loretta Sprissler, Alejandro DeebYewande Awe and John Morton in the World Bank. The team also includes Jan Vermeiren and Leisa Perch at the OAS. In country, the team includes Neville Trotz, Leslie Walling, Judith Clark and Ian King.

4. Quality Assurance Arrangements (see Annex 2):

5. Management Decisions:

Issue	Action/Decision	Responsibility

Total Preparation Budget: (US\$000) **Bank Budget:** **Trust Fund:** A PDF-B grant has been approved for \$345,000; arrangements for its execution are being finalized. A Dutch Trust Fund request for US\$95,000 has been approved.

Cost to Date: (US\$000)

GO

NO GO

Further Review [Expected Date] The PAD meeting is

being scheduled for winter 2001.

Walter Vergara
Team Leader

John Redwood
Sector Manager

Orsalia Kalantzopoulos
Country Manager

Annex 1: Project Design Summary

CARIBBEAN: Mainstreaming Adaptation to Climate Change Project (GEF)

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
<p>Sector-related CAS Goal: Reduce vulnerability to natural disasters and climate related negative impacts</p>	<p>Sector Indicators: Inclusion of climate change issues in sectoral, national and regional policies and strategies.</p> <p>Development and implementation of comprehensive disaster mitigation and risk minimization measures.</p> <p>Reduction in adverse impacts (loss of lives, infrastructure damage, insurance costs) due to natural disasters and negative climate related phenomena.</p>	<p>Sector/ country reports: CARICOM, OECS, World Bank and IDA sector and country reports</p>	<p>(from Goal to Bank Mission) Sustained political commitment to mitigation and or preparedness to natural disasters and climate related negative impacts.</p>
<p>GEF Operational Program: Climate Change</p> <p>Enabling Activity in Adaptation</p> <p>Stage II</p>			
<p>Global Objective: Mainstream climate change adaptation strategies into the sustainable development agendas of CARICOM countries, including Small Island and Low-Lying Developing States.</p>	<p>Outcome / Impact Indicators:</p> <ol style="list-style-type: none"> 1. National development strategies identify and consider climate change as a priority for sustainable development. 2. Adaptation plans and responses for vulnerable sectors adopted. 3. Percentage of total public expenditures that can be qualified as "win-win" 	<p>Project reports:</p> <p>Project Reports</p> <p>National Development Strategies</p> <p>Evaluation Studies</p>	<p>(from Objective to Goal)</p> <p>Continuity of commitments of governments;</p> <p>Availability of supporting infrastructure;</p> <p>Continuity and presence of active & trained labor force in participating countries;</p>

	<p>adaptation measures.</p> <p>4. Extent to which civil society expresses demand for policies and investment in adaptation initiatives.</p> <p>5. Increase in number of new climate change scientists and experts trained and working in public and private sector institutions.</p> <p>6. Increased involvement of national government institutions and institutions and enterprises working with vulnerable sectors in vulnerability assessment and adaptation planning.</p> <p>7. Increased level of public knowledge and awareness of climate change impacts.</p> <p>8. Number of countries requesting assistance in implementing CC action plans.</p>		
<p>Output from each Component:</p> <p>1. Climate change considerations integrated into development planning and sector strategies</p>	<p>Output Indicators:</p> <p>1.1 X# of water resources planning boards have adopted water management plans incorporating impacts from climate change</p> <p>1.2 X# of fisheries departments have assessed impacts of shifting fishing grounds, impact on total stocks and the bleaching and death of coral reefs and developed plans to address these concerns.</p> <p>1.3 X# of agr. depts. Have included CC risk management impacts in their analysis and planning practices.</p> <p>1.4 # of countries improving land use planning and</p>	<p>Project reports:</p> <p>NICUs</p> <p>MIS</p> <p>Reports on technical assistance provided</p> <p>Reports compiled by the project coordination unit</p>	<p>(from Outputs to Objective)</p> <p>Availability of supporting institutional and technical infrastructure</p> <p>Some existing knowledge and appreciation of CC in respective sectors</p> <p>Continued socio-economic and political stability</p>

<p>2. Adaptation options (demonstration pilots) formulated and regional agenda for adaptation drafted.</p>	<p>coastal zone management based on CC. 1.5 # of sector plans incorporate impacts from climate change. 2.1a X# of feasibility studies and implementation plans completed for demonstration projects 2.1b Vulnerability assessments completed in tourism, agriculture and forestry, water resources and fisheries; modalities identified and information generated for inclusion in the decision making process. 2.2a Regional position on adaptation adopted. 2.2b Inclusion of Regional Agenda on Adaptation in Second Communications. 2.3a Establishment of regional technical assistance and capacity building strategy 2.3b Database of relevant technical expertise and skills in and outside the region established and utilized by participating countries. 2.3c Expanded use by participating countries, of refined decision making tools established under CPACC. 2.3d Executing agency operates under CARICOM agreed legal structure</p>	<p>Reports of NICUs Project reports External evaluations MIS Second National Communications Regional Adaptation Strategy Database established Implementation & progress reports MIS GCOS & GLOSS reports on Caribbean Monitoring</p>	<p>Continued commitment by governments and personnel to the project and the process Legislative policy and process is open to change and flexible to address the changing nature of climate change issues Information exists on existing skills The CPACC pilot countries involved are committed to assisting the other countries in using the decision-making tools. Administration of funds through transparent system; Implementation of eligibility criteria, rules of operations and methodology of operations;</p>
<p>3. Regional climate change monitoring and modeling mechanisms and tools, expanded and refined.</p>	<p>3.1a X# of monitoring stations in operation and integrated into global networks. 3.1b Data use program implemented in gov. & private sector in X# of</p>	<p>Implementation & progress reports MIS GCOS & GLOSS reports on Caribbean Monitoring</p>	<p>Administration of funds through transparent system; Implementation of eligibility criteria, rules of operations and methodology of operations;</p>

	<p>countries. 3.2 A Caribbean climate change model with regional and national level applications developed 3.3a X# of scenarios developed for the region and individual countries based on downscaled GCMs. 3.3b National climate change indicators for monitoring and evaluation developed and included in national communications. 3.3c Inclusion of CC impacts into national EIA processes and procedures.</p>	<p>Station Second National Communications Caribbean Climate Change Model Environmental Regulations</p>	<p>Application for and availability of enough candidates for technical staff.</p>
<p>4. Cross-regional Dissemination and Replication developed</p>	<p>4.1 Replicability study of MACC for Pacific and other island nations. 4.2 Consultative workshop on adaptation for Island Nations 4.3 Cross-regional dissemination tools established</p>	<p>Replication report Web page, newsletter & others</p>	
<p>5. Executing agency project management unit established and operational.</p>	<p>5.1 Project staff (including Monitoring & Evaluation unit) selected, trained and evaluated annually according to transparent criteria defined in the Operation Manual; 5.2 Project MIS functioning at regional and producing adequate and frequent progress reports-PMRs (financial, procurement, monitoring, and annual operation plans) and used by all decision making bodies; 5.3 Baseline assessment & impact evaluation conducted; 5.4 Annual audits and annual financial statements; 5.5 A communication</p>	<p>Legal formation agreement Project personnel selection & performance evaluations; MIS; External evaluations and audits; External evaluations; Annual policy reports and background documents; Mid-term & project completion surveys .</p>	<p>Lessons learned from the project are included in national policy formulation; Technicians needed for national and regional offices are available in respective localities.</p>

	<p>strategy is implemented, updated & evaluated annually;</p> <p>5.6 Lessons learned and policy implications reports prepared annually & included in the OM;</p> <p>5.7 Annual operation plans prepared, approved & monitored/controlled on monthly basis;</p> <p>5.8 Risk management mechanism functional</p>		
<p>Project Components / Sub-components:</p> <p>1. Mainstreaming adaptation to climate change in development planning/ private investment</p> <p> 1.1 Assessment of impact on Tourism</p> <p> 1.2 Water resources planning boards</p> <p> 1.3 Fishery departments & local agriculture</p> <p> 1.4 Land use planning & disaster management.</p> <p>2. Supporting institutional/technical mechanisms</p> <p> 2.1 Formation of pilots/ vulnerability assessmts.</p> <p> 2.2 Support/coordination for 2nd National Communications/National Adaptation Plans</p> <p> 2.3 Institutional Capacity Building</p> <p>3. Expanding/strengthening knowledge base</p> <p> 3.1 Strengthening of</p>	<p>Inputs: (budget for each component)</p> <p>US\$2.7 million</p> <p>US\$0.4 (0.09)</p> <p>US\$0.4</p> <p>US\$0.5 (0.09)</p> <p>US\$1.4 (0.32)</p> <p>US\$ 3.5 million</p> <p>US\$2.56 (0.90)</p> <p>US\$0.54 (0.17)</p> <p>US\$0.40 (0.36)</p> <p>US\$2.1 million</p> <p>US\$1.6 {0.8}</p>	<p>Project reports:</p> <p>Progress, disbursement, audit and supervision reports.</p>	<p>(from Components to Outputs)</p> <p>Administrative framework for timely disbursements of financial resources;</p> <p>Transparency in the administration of financial resources;</p> <p>Availability of counterpart funding according to projections;</p>

<p>monitoring efforts</p> <p>3.2 Downscaling of global climate models</p> <p>3.3 Development of climate scenarios</p> <p>4. Cross-regional dissemination and replication</p> <p>4.1 Replicability study of MACC for Pacific and other island nations.</p> <p>4.2 Consultative workshop on adaptation for Island Nations</p> <p>4.3 Cross-regional dissemination tools established</p> <p>5. Project management</p> <p>5.1 Planning/Operations Manual</p> <p>5.2 Financial & Procurement Mngt</p> <p>5.3 HR Mngt</p> <p>5.4 M&E/Project MIS</p> <p>5.5 Risk Mngt</p> <p>5.6 Communications</p>	<p>US\$0.3</p> <p>US\$0.2</p> <p>US\$0.3 million (0.07)</p> <p>US\$0.7 million</p> <p>() = CIDA counterpart funding</p> <p>{ }=NOAA counterpart funding</p>		
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Annex 2: Project Preparation Plan
CARIBBEAN: Mainstreaming Adaptation to Climate Change Project (GEF)

A. Core Project Preparation Team

Name	Bank Unit	Borrower Agency	Role/Responsibility
Walter Vergara	LCSES		Task Team Leader
Jan Vermeiren		OAS	Manager of the PDF-B
Mark Austin	LCSES		Project Management Specialist
Leisa Perch		OAS	Environmental Specialist
Loretta Sprissler	LCSES		Operations Specialist
John Morton	LCSES		Environmental Engineer
Yewande Awe	LCSES		Environmental Engineer
Ralph Osterwoldt		CIDA	CIDA liaison
Neville Trotz		RPIU	Regional Project Manager
Leslie Walling		RPIU	Marine Ecology Specialist
Jim Hendee		NOAA	Monitoring Expert
Lee Chapin		RPIU	Monitoring Expert
Leonard Nurse		Government of Barbados	Modeling Expert
Rajeev Swamy			Financial Management Expert

B. Project Preparation Activities

Key Outputs	Prepared by	Responsibility	Cost	Appraisal Requirement	Target Date
Feasibility Studies					
---baseline assessment of current technical capacity in national resource management	Consultants	OAS-WB	(\$30,000)		October 2001
---identification of regional agenda			(\$20,000)		
---design of monitoring efforts			(\$35,000)		
---selection of modeling tools			(\$10,000)		
---guidelines for demo projects			(\$25,000)		
---financing and implementation plan			(\$5,000)		
---communications strategy			(\$5,000)		
National consultations (2)		CARICOM/OAS	\$40,000		October-December 2001
Regional consultations (2)			\$60,000		
Environment Assessment					
Environmental analysis framework	W. Vergara	RPIU-WB	10,000	yes	September 2001
Social Assessment					
			tbd	yes	tbd
Institutional Assessment					

Regional capacity assessment and needs to implement adaptation to climate change in the context of Stage II Adaptation			30,000		November 2001
Project Implementation Plan (PIP)	Leisa Perch, Leslie Walling	Mark Austin		Yes	December 2001

C. Specialist Tasks

Specialist Area	Level of analysis /Tools	Skills Needed	Key Output Document	Bank Review Target Date

Annex 3: Project Processing Timetable
CARIBBEAN: Mainstreaming Adaptation to Climate Change Project (GEF)

Project ID: P073389 Timetable step	Key Dates		
	Original	Plan	Actual
GEF Eligibility Confirmation	10-Jan-01	27-May-01	14-May-01
Concept Review	24-May-01	30-Aug-01	06-Sep-01
RVP/ROC/OC Signoff	-	-	-
PID to Infoshop	-	-	-
PID received by Infoshop	-	-	-
GEF Council Approval	09-May-01	15-Dec-01	-
Decision Meeting	04-Dec-01	26-Feb-02	-
Auth Appr/Negs (in principle)	22-Jan-02	18-Mar-02	-
Update PID to Infoshop	-	-	-
Update PID received by Infoshop	-	-	-
EA Received in Infoshop	22-Jan-02	-	-
Begin Appraisal	23-Jan-02	19-Mar-02	-
Send Notice/Issue Inv Neg	-	-	-
Begin Negotiations	-	-	-
GEF CEO Endorsement	-	25-Jun-02	-
Board Approval	09-Apr-02	15-Aug-02	-

Annex 4: Incremental Cost Analysis
CARIBBEAN: Mainstreaming Adaptation to Climate Change Project (GEF)

The project is an enabling activity (as all Stage II activities) and therefore, incremental costs are equal to the full project costs. and an incremental cost analysis is not necessary.

Annex 5: STAP Roster Technical Review
CARIBBEAN: Mainstreaming Adaptation to Climate Change Project (GEF)

STAP Reviewer : Bhawan Singh, Professor/Climatologist, University of Montreal

The project will attempt to mainstream adaptation to climate change among CARICOM member countries. Water resources, agriculture and land use are the main sectors targeted. A component involving modelling (downscaling GCM data) and monitoring is also included.

Special emphasis on water resources management is laudable. Statistical trends show declining rainfall, especially in the Northern Caribbean. Inter-annual variability of rainfall, linked mainly to the ENSO cycle, is also increasing. Furthermore, climate models (AOGCM's) project declining and more variable rainfall in the region. This problem will very likely be exacerbated by higher ET rates and the increasing competition for water among user sectors, including agriculture, industry and domestic use. Bringing these issues to the fore, in terms of regional governments policy, as being proposed by MACC, is of paramount importance.

All in all, the project is timely, of significant merit and responds to a number of pressing needs insofar as capacity building in the area of adaptation to climate change is concerned.

However, the following are comments and suggestions that may help focus and strengthen the proposal:

1. Based on experiences gleaned from working with a number of Caribbean countries through research (Barbados and Trinidad and Tobago) and the preparation of National Communications (Antigua and Barbuda, Guyana, St. Lucia, St. Kitts and Nevis, Dominica, Haiti) there is a pressing need for capacity in the region for determining vulnerability to climate change and impacts assessments for critical sectors such as agriculture (crop yield changes, irrigation requirements), water resources (rainfall variability and extreme events-flooding/drought, ET losses) and coastal resources including tourism. Some significant capacity building took place under CPACC in the areas of climate and sea level monitoring including coral reef monitoring, coastal resource management and coastal vulnerability assessment.

Mainstreaming adaptation to climate change in the focal areas addressed above, as being proposed by the MACC project, will contribute in a significant manner, especially capacity building that would provide the required awareness expertise and autonomy to fill whatever gaps in knowledge and vulnerability assessments that may exist upon the completion of CPACC and eventually MACC.

2. Given the crucial role of tourism for the economies of islands such as Antigua and Barbuda, Barbados, the Bahamas and St. Lucia, it is important to lay emphasis on this sector.

By adopting a natural resource management approach, instead of the traditional user

sector approach, focussing on water resources and land and biomass management, MACC provides an interesting alternative that has the advantage of streamlining the diagnosis of the problem, namely vulnerability and adaptation to GHG climate change.

By focussing on the natural resource base and how its sustainability might be affected by climate change MACC will provide a very useful mechanism for important user sectors such as housing, tourism, banking and trade to assess their vulnerability to climate change and how they may adapt to ensure their sustainability.

3. Elaborating on details relating to the mechanisms and methodologies for mainstreaming adaptation measures amongst Caribbean governments is crucial and necessary in light of the very diverse economies of Caribbean countries (ex. heavy industrialization in Trinidad and Tobago, tourism and off-shore banking in the Bahamas and Barbados, agriculture in Guyana). Vulnerabilities to climate change and variability also vary in regard to geographical location (ex. hurricanes in the Northern Caribbean).

CPACC addressed this issue to some extent in its country by country workshops on climate change vulnerabilities and adaptation.

MACC will further promote and enhance this effort especially through the Caribbean Climate Change Center (CCCC) being a core element of the project.

4. Our experience, even with developed countries, is that it is very difficult to mainstream adaptation policies by themselves. It is very often easier to link climate change with other stressors to facilitate its acceptance. Caribbean countries often claim that there are more pressing economic and environmental problems than climate change. In agriculture for, instance, linking climate change with crop yield and farm profitability, farm subsidies and unemployment as influenced by market and other factors, may be advisable.

By bringing climate change issues closer to the minds and agendas of policy makers in the region, MACC can potentially play a significant role in addressing this issue.

5. The component on monitoring and modelling will have to be more clearly defined. Given the fact that MACC is being proposed as a stage II activity with a 4-year time frame, it would be advisable to steer away from complicated modelling efforts (AOGCM, RCM) that have a long gestation time and focus on statistical downscaling techniques (50x50 km) to achieve the spatial scales of climate change scenarios applicable to the small island states of the Caribbean.

It may also be highly advisable to involve Tertiary institutions in the region (UWI, CIMH) in these efforts. As a matter of fact UWI is about to embark on a program of graduate studies in Environment with climate change as one of the core streams.

6. Sensitization of Caribbean governments and peoples to climate change and variability, including sea level rise and their potential impacts, is highly necessary to promote sustainable development in the face of GHG climate change.

Some degree of sensitization, especially relating to adaptation issues has already been achieved by CPACC.

The MACC project being proposed here, especially the CARICOM controlled CCCC, will almost certainly contribute in a significant manner in this regard.

7. The budget amount, the allocation of funds and the Financial Plan seem appropriate and adequate, given the broad and regional coverage.

Response from the Team.

The STAP review is highly supportive of the project concept. STAP review suggestions have been incorporated where applicable. Several of the comments relate to the need for additional details, which will be secured during project preparation. Specifically,

Need for capacity in the region for determining vulnerability to climate change and impact assessments for critical sectors.

The project will support vulnerability assessments and has been restructured to provide for a more direct linkage to critical sectors of the economy. The preparation work will identify capacity building needs.

Need for an emphasis on the tourism sector

Component (a) of the project includes now a direct activity linked to the tourism sector.

Need to elaborate on details related to the mechanisms and methodologies for mainstreaming adaptation measures.

This is part of the preparation agenda. Details will be discussed at the National and regional workshops envisaged under the preparation activities being supported through the PDF-B.

Need to define the monitoring and modeling activity in more detail.

This will also be addressed as part of preparation activities. Particular attention will be

provided to available tools and there will be an effort to steer away from complicated modeling efforts. Tertiary institutions in the region will be involved (UWI-CIMH)

Annex 6
Caribbean: Planning for Adaptation to Global Climate Change Project (CPACC)
Summary

The GEF-funded CPACC Project (1997-2001) is being implemented by the Organization of American States (OAS), in partnership with University of the West Indies Centre for Environment and Development (UWICED), with the World Bank acting as the GEF Implementing Agency. CPACC's overall objective is to support Caribbean countries in preparing to cope with the adverse effects of GCC. As a *Stage I Enabling Activity*, the project has focused on creating awareness and organizing training in skills relevant to impact assessment and adaptation planning; collecting and disseminating sea-level and climate data in each country; conducting impact and vulnerability studies; and identifying policy options to address adaptation issues. The project has been very successful and is expected to close on time (December 2000), fully achieving its objectives.

Specific achievements of the CPACC project are:

- a) Establishment of a sea-level and climate monitoring system that contributes to global and regional assessment of the issues. The monitoring stations and related information network installed in 12 countries have improved the CC monitoring and evaluation capacity in the region. The primary utility of the data is to document sea-level rise and changes in sea surface temperature (SST), thus assisting in the global monitoring of the impacts of climate change. The exact contribution of this Caribbean monitoring activity within the global monitoring efforts are being assessed. Additional applications in areas such as shipping, tourism and monitoring of extreme events are also being promoted.
- b) Improved access to and availability of data. The project has developed an extensive database for coastal zone management and climate change monitoring, accessible to a wide range of environment and development agencies in each country.
- c) Increased appreciation of climate change issues at the policy-making level and technical support to better define the regional position at the Convention. CPACC has made policy-makers, decision-makers, technical personnel and the wider public aware of climate change, and has increased the appreciation for the complexity and integrated nature of climate change issues. The project has enabled a more unified and better documented regional position to be taken before the Convention and the Conference of Parties.
- d) Meeting country needs for expanded vulnerability assessment. Pilot vulnerability studies have expanded the knowledge of vulnerability assessment tools and methods and have facilitated an increased awareness of the most physically vulnerable sectors in the Caribbean sub-region
- e) Establishment of coral reef monitoring protocols. Coral reefs have proven to be key barometers of climate change. As a result of ongoing efforts within CPACC, monitoring and early warning capabilities are being enhanced. The data has assisted in the documentation of the pace of coral bleaching and impacts on coral reefs caused by changes in SST. Like with SST and sea-level change, efforts are being undertaken to link the CPACC coral reef monitoring activities with the global networks.
- f) Creation of a network for regional harmonization. Through collaborative efforts with a number of existing agencies (i.e. the Caribbean Tourism Organization (CTO), the Caribbean Alliance for Sustainable Tourism (CAST), the Centre for Resource Management and Environmental Studies (CERMES) of the University of the West Indies, the Caribbean Energy Information System (CEIS), the Caribbean Development Bank (CDB), the Caribbean Conservation Association (CCA), the Caribbean Environmental Health Institute (CEHI), the Caribbean Disaster and Emergency Response Agency (CDERA), private

sector interests such as Petrotrin of Trinidad and Tobago as well as the insurance and banking sector) CPACC is introducing climate change as a factor in these agencies' agendas, and is establishing programmatic linkages between CC and other activities.

A final evaluation of CPACC is scheduled for the third quarter of calendar year 2001. To date, there have been two comprehensive evaluations of the project:

(a) World Bank Mid-Term Evaluation. The mid-term review of CPACC (September 1999) concluded that implementation performance throughout the first half of the project was satisfactory and constituted a sound basis on which to continue CPACC activities.

(b) GEF Secretariat Review of GEF-Funded Climate Change Projects in the Caribbean

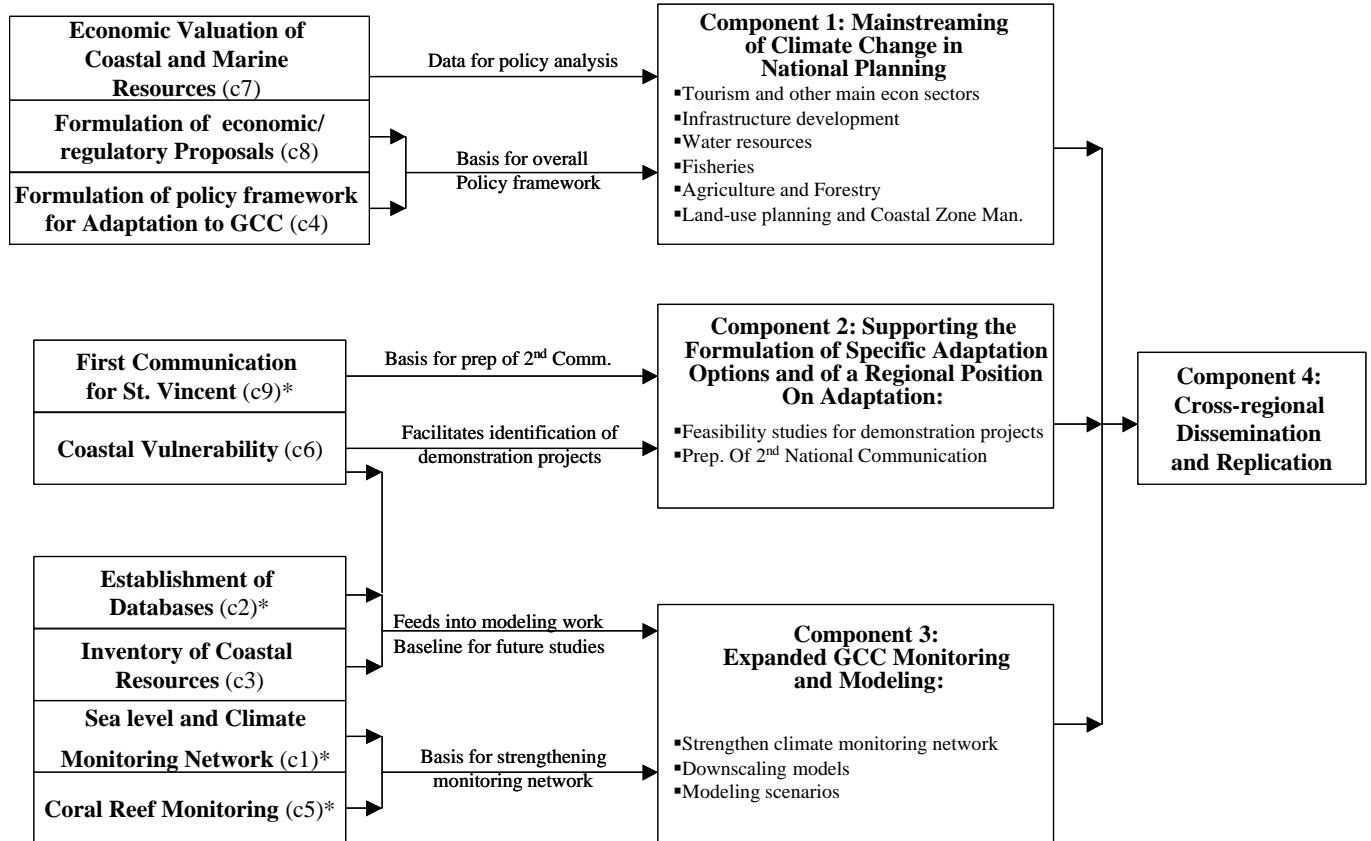
The GEF Secretariat commissioned (first quarter 2000) an evaluation of the GEF-UNDP funding for National Communications, the GEF-UNDP National Communications Support Program (a regional project), and the CPACC (A Synthesis of Performances and Experiences of Caribbean States Participating in GEF-Financed Climate Change Projects, Impact Consultancy Services, July 2000). The report states that the GEF funded efforts are meeting the objectives of assisting CARICOM countries to: (a) develop the capacity to assess and adapt to the possible adverse impacts of Climate Change, and (b) to meet their respective obligations under the UNFCCC, with respect to Initial National Communications. The report points out that prior to the start of CPACC, the Caribbean was characterized by a general weakness in policy and institutional arrangements for environmental management and sustainable development, constraining the effect of the capacity building activities of CPACC. The report credits the CPACC project with an increase in awareness and technical capacity in the region.

Annex 7

Linkage Between CPACC and MACC Activities

CPACC Activities¹

MACC Activities



¹ CPACC component number shown in parenthesis

* Indicates completed CPACC activities. The remainder are in progress.

Annex 8
Coordination Protocol between the Proposed IWCAM and MACC Projects

The objective of this protocol is to register tentative agreements reached between representatives from the UNDP (United Nations Development Program), the Regional Project Implementation Unit and the World Bank, geared to integrate the work on freshwater and coastal zone management under the Integrated Watershed and Coastal Zone Management Project (IWCAM), which is being proposed by UNDP for GEF funding, with activities sponsored under MACC with direct relevance to water supply, land use and climate change adaptation.

Specifically, the Protocol, to be enhanced and revised as project preparation for both initiatives progresses, commits both project implementation units and the respective executing agencies to exchange on a routine basis:

- a) information on implementation (reports on progress, barriers, options);
- b) identification of opportunities for cooperation;
- c) joint coordination of requests for information from Government Agencies;
- d) cooperation in the use of regional human resources and institutional assets;
- e) and a general liaison function for all aspects that may be common for the successful implementation of both projects.

The protocol also envisions that a coordination group for purposes of implementing the provisions here outlined will be formed by the managers of the regional implementation units. This coordination group will provide for use in the respective supervision reports, a summary of status, results and opportunities for cooperation between the executing agencies and the implementation agencies.

Annex 9
Institutional Analysis
Draft Terms of Reference Rev 2

Background.

The recent discussions in Bonn (July 2001), a follow-up of the Conference of Parties (COP) 6 to the United Nations Convention on Climate Change (UNFCCC), have resulted in a landmark agreement to reduce greenhouse gas emissions below the 1990 level, ratifying the process outlined under the Kyoto Protocol. In addition, the meetings in Bonn have also resulted in a reaffirmation of the flexibility mechanisms to the UNFCCC (i.e., the use of market systems to reduce greenhouse gas emissions, including the use of carbon sinks) as well as a strong endorsement of adaptation measures to the impacts of climate change. Specifically, the conference of parties has instructed GEF to support adaptation activities, especially in small developing island nations and low-lying states.

The proposed Mainstreaming Adaptation to Climate Change (MACC) project is being designed to meet the need to promote the mainstreaming of adaptation strategies and measures for the CARICOM community of small island states (SIDS) and low-lying areas and to follow on the achievements of the GEF-funded Caribbean – Planning for Adaptation to Global Climate Change Project (CPACC), scheduled to close in December 2001. CPACC is being successfully executed through the Organization of American States (OAS) in partnership with the University of the West Indies Centre for Environment and Development (UWICED), with the World Bank as GEF Implementing Agency. CPACC's overall objective is to support Caribbean countries in preparing to cope with the adverse effects of global climate change. CPACC has focused on creating awareness and organizing training in skills relevant to impact assessment and adaptation planning; collecting and disseminating sea-level and climate data in each country; conducting impact and vulnerability studies; and identifying policy options to address adaptation issues. The project has been very successful, and has been characterized as such by the mid-term review done by the Bank in September 1999 and by the GEF monitoring and evaluation review. The project is expected to close on time, fully achieving its objectives.

The overall objective of the MACC project is to mainstream climate change adaptation into the national development planning and private sector investments in the region. This will be sought through support for: (i) the integration of climate change considerations into development planning and sectoral investment projects; (ii) the formulation of demonstration pilots for adaptation and the support to the national adaptation plans of action; (iii) monitoring and modeling of regional climate change; and iv) dissemination and replication efforts. A key contribution to the achievement of these objectives will have to be made by existing institutions that are involved in development assistance and environmental management in region. This, in turn, will depend to a large extent on these institution's interest, willingness and capacity to make climate change part of their agenda.

The regional mechanism that will be established to execute the MACC project will have to work closely with these institutions in order to achieve the mainstreaming envisioned by the MACC project.

Objective of the Consultancy

With this consultancy the Bank seeks to define the institutional arrangement to: (a) successfully implement the activities contemplated under MACC, and (b) achieve the main objective of mainstreaming climate change adaptation issues into key economic and social sectors among participating nations. The consultant should shed light as to the sustainability of the recommended institutional arrangement, and its temporary or permanent nature. More precisely the consultant is expected to: (i) identify and define actions and responsibilities of the Project Implementation Unit, PIU, including coordination needs; (ii) assess current institutional capacity to implement actions as contemplated under MACC; (iii) identify and analyze institutional arrangements/approaches to implement MACC and pursue its mainstreaming objectives, and (iv) assess the capacity of existing institutions to carry out functions pertaining to the mainstreaming of climate change which would not be responsibility of MACC directly.

Scope of the consultancy

The consultant will carry its activities considering all of the participating countries. The consultant is expected to develop his/her assignment in the region, including field visits to key institutions and discussing and exchanging information with all other relevant institutions and major stakeholders. The consultant is expected to:

1. Conduct a detailed analysis of the institutional requirements of MACC, in the process becoming familiar with the project objectives, components and activities, as well as participating agencies and existing coordination mechanisms.
2. Review in detail CPACC's institutional setup, activities, RPIU, coordination arrangements, stakeholders participation, and draw lessons for future climate change activities. The analysis will also include some review of institutional approaches for climate change in other regions/countries, especially the success stories and regional context and institutional characteristics contributing to this success.
3. Institutional Baseline. The consultant is expected to analyze existing institutions that work in climate change and /or that have the potential to make a contribution to mainstreaming climate change in the region. The institutional analysis should indicate, for each organization of interest, (i) its geographical coverage, (ii) the sector where it works, (iii) its main character as coordinating/planning agency or as executing organization, and (iv) strengths and weakness – opportunities and risks, as they relate to the objectives and character of MACC. The identification should include a descriptive summary of each institutions, covering mandates, structure, resources and an assessment of its capacity to integrate climate change issues to its activities.
4. Institutional gap analysis. Conduct a gap analysis comparing the existing mandates and needs in climate change. Based on the information collected the consultant should determine for

each agency:

- Opportunities for the institution to incorporate climate change considerations into its agenda and work plan.
- General interest of the institution and its leadership in expanding its agenda/work plan with climate related , but not necessarily mandated, activities.
- Institutional capacity to expand activities into MACC related activities.

5. Identification and preliminary assessment of alternative institutional arrangements.

Different organizational set ups will be reviewed and evaluated according to the needs and objectives of MACC. The consultant is expected to evaluate no less than 5 options, including CPACC's RPIU, and the surrounding institutional arrangement, as well as the Caribbean Climate Change Center (CCCC, including a review of legal and institutional processes, mechanisms and institutional linkages).

6. Recommendations. The consultant will present findings and recommendations including:

- Proposed institutional arrangement for MACC,
- Governance structure,
- Coordination mechanisms,
- Staffing needs, responsibilities and minimum skills,
- Recommendations for consensus building, temporal nature, and other issues pertaining to the implementation of the recommended approach.

Duration. The analysis will be commissioned by October 1, 2001 and is expected to take 8 weeks to complete. The anticipated date of delivery of the draft final report is January 15, 2002.

Output. A final report is the output of this consultancy. The report should cover all items indicated in the scope of activities. The corresponding executive summary should present the concrete recommendations on the institutional set up for MACC in the short and long term and its implementation strategy.

Coordination and reporting. The consultant will coordinate activities closely with the OAS, the RPIU, the Canadian Executing Agency, CARICOM and the World Bank. The consultant will report its findings to the OAS (J. Vermeiren) as executing agency for the project preparation activities and to the World Bank (W. Vergara). The consultant will be provided with the progress reports from CPACC, the CIDA project document, the draft documentation for MACC and background documentation on the Institutional Development Initiative of the UNFCCC.

Annex 10
Eligibility of Island Nations and Territories for Adaptation Funds under the UNFCCC

Country-Territory	Non Annex 1 ¹	CPACC member	Completed 1st Communication ²	MACC Participation	SIDS ³
Antigua & Barbuda	Yes	Yes	Yes	Yes	Yes
Dominica	Yes	Yes	No ⁴	Yes	Yes
Bahamas	Yes	Yes	Yes	Yes	Yes
Barbados	Yes	Yes	Yes	Yes	Yes
Jamaica	Yes	Yes	Yes	Yes	Yes
St. Lucia	Yes	Yes	Yes	Yes	Yes
St. Vincent	Yes	Yes	Yes	Yes	Yes
St. Kitts and Nevis	Yes	Yes	Yes	Yes	Yes
Belize	Yes	Yes	Yes	Yes	Yes
Guyana	Yes	Yes	Yes	Yes	Yes
Trinidad and Tobago	Yes	Yes	Yes	Yes	Yes
Grenada	Yes	Yes	Yes	Yes	Yes
French Island Territories	No	No	No	No	No
Dutch Island Territories	No	No	No	No	No
US Territories	No	No	No	No	No
Central America	Yes	Yes	Yes	No	No
Cuba	Yes	No	Yes	No	No
Haiti	Yes	No	No	No	No
Dominican Republic	Yes	No	No	No	No

¹ In order to be eligible for GEF funds, a country must be non-annex 1 as per provisions of the United Nations Framework Convention on Climate Change (UNFCCC) subscribed to by the community of nations in 1992.

² In order to be eligible to receive stage II adaptation resources, a country must have completed and submitted to the convention its 1st Communication. This must be done prior to submission of the proposal to the GEF, as per instructions provided by the Conference of Parties to the Convention to the GEF.

³ In order to receive priority for adaptation funds, a country must be a Small Island or Low Lying area (SIDS).

⁴ Dominica is in the process of officially submitting its communication.

