

SIGNATURE PAGE

Country: Barbados

UNDAF Outcome(s)/Indicator(s):
(Link to UNDAF outcome. If no UNDAF, leave blank)

Outcome: Stronger Environmental Management systems with improved level natural disaster preparedness.

Indicator: Island strategies for conservation including policy and advocacy. Supporting Education programmes

Outcome: Digital divide reduced through technology development.

Indicator: Appropriate technology identified

Expected Outcome(s)/Indicator (s):
(CP outcomes linked to the SRF/MYFF goal and service line)

• Framework and strategy for sustainable development. Conservation plans. Service line 1.1

• Effective water governance. Effective management of water resources. Service line 3.2

• Access to sustainable energy. Removal of barriers to renewable energy. Service line 3.3

Implementing partner: The Environment Division of the Ministry of Energy and Environment
(designated institution/Executing agency)

Other Partners: _____
(formerly implementing agencies)

Programme Period: 2006-2008
Programme Component: _____
Project Title: PIMS #3361 CC EA SNC of Barbados
Project ID: 00043445
Project Duration: 3 years
Management Arrangement: NEX

Budget \$405,000
General Management Support Fee _____
Total budget: \$405,000
Allocated resources:
• Government _____
• Regular _____
• Other: _____
 ○ Donor _____
 ○ Donor _____
 ○ Donor _____
• In kind contributions _____
Unfunded budget: _____

Agreed by (Government): [Signature]

Agreed by (Implementing partner/Executing agency): [Signature]
Rosina Wilshire
Resident Representative 2 March 2007

Agreed by (UNDP): _____

United Nations Development Programme
Global Environment Facility

28 January 2005



Rosina

Dear Ms. Wiltshire,

Subject: Barbados Self-assessment to prepare a project proposal for its Second National Communication to the UNFCCC (PIMS #3340)

The above-mentioned self-assessment has received the appropriate clearance in accordance with the GEF established procedures. I am pleased to delegate to you the authority to sign the above-mentioned project document on behalf of UNDP and commence the implementation of the project which signed by the government of Barbados.

Please note that the objective of this self-assessment is to assist Barbados to prepare and submit a project proposal for the preparation of its Second National Communication. The main outcome of the self-assessment is the corresponding project document for UNDP review and approval. The UNDP/GEF Regional Coordination Unit will assist the Government and the Country Office during the preparation of the project document, which is expected to be completed within 3 months. At this time, a separate delegation of authority will be issued upon approval of the Second National Communication project document.

Upon receipt of this DOA, the Annual Workplan (AWP) should be generated through Atlas and sent to the Regional Coordination Unit (RCU) for final clearance, prior to obtaining signature of the executing agency. Once the project document is signed, the Country Office should inform the RCU and HQ in order to allow issuance of Atlas ASL by HQ.

For reporting purposes, we ask you that you please link our ATLAS Parent Award No. 00038705 to the ATLAS Award/Project that you have created. The steps are as follows: [Grants/Award/Award Profile/View Contract (link)/Additional Information (tab)/ Enter: 00038705 from Parent Contract / Save].

Please ensure that a fully signed electronically scanned copy of the cover page of the project document is forwarded by email to Teresa Bosques, Programme Associate for Latin America and the Caribbean, who will post it in PIMS. When the project document is signed, please ensure that the project budget is entered into the UNDP Atlas corporate system.

Yours sincerely,

Warm regards

Frank Puno
Executive Coordinator

Ms. Rosina Wiltshire
Resident Representative
UNDP-Barbados

- c.c. Catherine Vallée, Regional Coordinator Climate Change, UNDP-GEF/Mexico City
- c.c. Maribel Rodriguez, Environmental Focal Point, RBLAC, New York
- c.c. Oliver Page, Portfolio Manager, UNDP-GEF/Mexico City

UNDP Project Document

Government of Barbados

United Nations Development Programme

**ENABLING ACTIVITIES FOR THE PREPARATION OF BARBADOS 'S SECOND
NATIONAL COMMUNICATION TO THE UNFCCC**

PIMS #3361 CC EA SNC of Barbados

Brief description

This project will allow Barbados to prepare its second national communication to the Conference of Parties of the United Nations Framework Convention on Climate Change. The activities within the second national communication are a continuation of work initiated in the initial national communication. The main components of the project are (a) An inventory of greenhouse gases, (b) An indication of programmes containing measures to facilitate adequate adaptation to climate change (c) An analysis of measures for greenhouse gas abatement and (d) Information related to the implementation of the UNFCCC.

The project will aid in building capacity related to climate change in Barbados as well as enhancing public awareness with regards to climate change

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Acronyms

CARICOM	Caribbean Community
CCCCC	Caribbean Community Climate Change Centre
CDERA	Caribbean Disaster Emergency Response Agency
CPACC	Caribbean Planning for Adaptation to Climate Change
CRDEP	Caribbean Renewable Energy Development Programme
GEF	Global Environmental Facility
GHG	Greenhouse gas inventory
INC	Initial National Communications
IPCC	Intergovernmental Panel on Climate Change
MACC	Mainstreaming Adaptation to Climate Change
NCSA	National Capacity Self Assessment
OTEC	Ocean thermal energy conversion
SNC	Second National Communication
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

1. Elaboration of the Narrative

1.1 Situation Analysis

Barbados is located at 13.1N and 59.32 W and is one of the twelve small island developing states (SIDS) in the Caribbean Basin. The most easterly of the Caribbean islands, Barbados is approximately 166 square miles (431 sq. Km) with an estimated population of 270,000, making Barbados one of the most densely populated countries in the western hemisphere.

Barbados is non volcanic, consisting of underlying sedimentary deposits, all capped by a layer of coral up to 300 feet (90m) thick. In the more elevated north-eastern part of the island, erosion has removed the coral cover across an area comprising about 15% of the island total surface. Barbados enjoys a tropical, oceanic climate with no drastic changes in either seasonal or daily temperatures. Weather seasons can be classified as either wet or dry, with the wet season coinciding with the Atlantic hurricane season, which runs from June till November.

Barbados's economic and social development is grounded in stable government democratic freedoms, the advancement of human rights, an independent and fair judicial system and a well educated labour force. Tourism and financial services are now the major contributors to the economy which grew by 3.7% in 2004. Agriculture through sugar production is still extremely important to the Barbados economy, however with the changing international trading regimes sugar production has been on the decline. Barbados like many other small islands has a small vulnerable open economy which is extremely susceptible to international shock. Located in the south east Caribbean, Barbados is also vulnerable to the impacts of climate related natural disasters such as hurricanes.

Barbados signed the United Nations Framework Convention on Climate Change (UNFCCC) on 12 June 1992 and ratified the UNFCCC on March 23 1994. Barbados acceded to the Kyoto Protocol on August 7th 2000. Barbados is also party to a number of other UN Conventions such as the Biodiversity Convention, the Biosafety Protocol and the Desertification Convention.

The Government of Barbados has always considered environmental issues as a priority. In 1994 Barbados hosted an international meeting with regards to the sustainable development of small islands states. The Barbados Programme of Action has provided the blue print for the sustainable development of small island states. Sustainable development and management of natural resources has always been a key concern for Barbados. Barbados has established a commission on sustainable development which assists government in the establishment of sustainable policies.

As an island state Barbados is highly vulnerable to climate change and this was highlighted in the Initial National Communications (INC). The Environment Division of the Ministry of Energy and the Environment will be responsible for preparing the second national communications (SNC), with other governmental agencies such as the Ministry of Economic Affairs and the Ministry of Public Works being involved in the process. Non governmental organizations (including representatives from academia and the private sector) will also be involved in the preparation of the second national communications. With Environment Division

of the Ministry of Energy and the Environment being responsible for the implementation of the SNC, synergies with other projects and programmes such as biodiversity, ozone, and desertification will be integrated into the project. There is an existing climate change committee which is responsible for the climate change matters in Barbados. The process for preparing the SNC for Barbados will assist with improving climate change knowledge in Barbados as well as aiding in the capacity building process as it relates to climate change.

1.2. Strategy

The enabling activity for the SNC will allow Barbados to implement the activities required in order to fulfill its commitments under the UNFCCC. The activities will enable Barbados to fulfill its reporting obligations, as well as build capacity as it relates to climate change. The project will build upon existing work which has been completed as it relates to climate change. The project will be closely linked to all of the work related to sustainable development which the UNDP is responsible for implementing in the Eastern Caribbean, as the project will part of the Sub-Regional Development Assistance Framework, within which the UNDP implements its programmes

The project will support the implementation of the UN Millennium Development Goals (MDG) for the Environment. Capacity building activities will be a key component of the project, along with public awareness activities. The project will primarily utilize local and regional expertise, to aid with project activities as it relates to implementation. The project will aid in strengthening relevant institutions in Barbados as well as improving data collection. The project will cooperate with the Caribbean Community Climate Change Centre (CCCCC), as well as linking with the Mainstreaming Adaptation to Climate Change project (MACC), and the Caribbean Renewable Energy Development Programme (CREDP). The project will also cooperate with the Caribbean Disaster Emergency Response Agency (CDERA) and the relevant projects relating to climate change which CDERA is implementing.

1.3. Management Arrangements

See management arrangements in Appendix B section 5.

1.4 Monitoring and Evaluation

Monitoring responsibilities and events

A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

Day to day monitoring of implementation progress will be the responsibility of the Project Coordinator, Director or CTA (depending on the established project structure) based on the project's Annual Workplan and its indicators. The Project Team will inform the UNDP-CO of

any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

Project Monitoring Reporting

The Project Management will prepare and submit to the UNDP-GEF the following reports which form part of the monitoring process:

(a) *Inception Report (IR)*

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year Work Plan divided in quarterly timeframes detailing the activities and progress indicators that will guide implementation during the first year of the project. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

(b) *Quarterly Progress Reports and Mid Term Review*

Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office and the UNDP-GEF regional office by the project team. There will be a mid term review of the project with the project management and the local UNDP Country office.

(c) *Technical Reports*

Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on

key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

Audit Clause

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

1.5 Legal Context

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Barbados and the United Nations Development Programme, signed by the parties. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

UNDP acts in this Project as Implementing Agency of the Global Environment Facility (GEF), and all rights and privileges pertaining to UNDP as per the terms of the SBAA shall be extended mutatis mutandis to GEF.

The UNDP Resident Representative is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- d) Inclusion of additional annexes and attachments only as set out here in this Project Document.

2. Total Budget

Account ID	Division	Programme	Activity	Unit	Quantity	Unit Cost	Total Cost
1. National Circumstances	Environment Division	GEF	71300 Local Consultants		2,000	3,000	5,000
<i>Sub-Total</i>					2,000	3,000	5,000
2. National Greenhouse Gas Inventories	Environment Division	GEF	71300 Local Consultants		8,000	7,000	18,000
	Environment Division	GEF	71200 International Consultants		6,000	7,000	18,000
	Environment Division	GEF	71600 Travel		3,000	3,000	9,000
	Environment Division	GEF	72100 Service Contracts		5,000	5,000	15,000
<i>Sub-Total</i>					22,000	22,000	60,000
3. Programmes containing measures to facilitate adequate adaptation to climate change	Environment Division	GEF	71300 Local Consultants		15,000	10,000	35,000
	Environment Division	GEF	71200 International Consultants		8,000	5,000	13,000
	Environment Division	GEF	71600 Travel		4,000	4,000	12,000
	Environment Division	GEF	71200 Service Contracts		10,000	8,000	26,000
<i>Sub-Total</i>					37,000	35,000	91,000

4. Programmes containing measures to mitigate CC	GEF		71200	Local Consultants	6,000	9,000	9,000	24,000
	GEF		71200	International Consultants	4,000	4,000	4,000	12,000
	GEF		71600	Travel	3,000	4,000	3,000	10,000
	GEF		72100	Service Contracts	5,000	5,000	5,000	15,000
	Sub Total				18,000	22,000	21,000	61,000
5. Other relevant information (e.g. research and systematic observation, technology transfer, education and public awareness, capacity building)	GEF	Environment Division	71300	Local Consultants	5,000	5,000	5,000	15,000
	Sub Total				5,000	5,000	5,000	15,000
6. Constraints & Gaps; Related Financial, technical, & capacity needs	GEF	Environment Division		Local Consultants			10,000	10,000
	Sub Total						10,000	10,000
7. Technical Assistance							0	0
	Sub Total						0	0
8. Compilation, Production of communication, including Executive Summary & its translation	GEF	Environment Division	71300	Local consultants			7,000	7,000
		Environment Division	71400	Contractual services			8,000	8,000
Sub Total							15,000	15,000

3. Appendices

Appendix A: Summary report of the self-assessment exercise

The Stocktaking Process

The stocktaking process was carried out by the Environment Division of the Ministry of Energy and Environment utilizing a local consultant. The self assessment exercise occurred in accordance with GEF Operational Procedures for the Expedited Financing of National Communication from Non Annex 1 Parties (GEF/C.22/Inf.16). The purpose of the stocktaking exercise is to identify the key needs and priorities for the SNC and to obtain support from the various stakeholders who will be involved in the second national communications

The following process was utilized in the stocktaking process (i) Stakeholder workshop with government ministries, private sector and non governmental organizations (ii) desk review of information relating to climate change activities in Barbados, in particular the initial national communications and (iii) consultation with individual experts.

The stakeholder consultation workshop featured presentations on the initial national communications and its activities. The process and the details of the initial national communications was then discussed with key areas highlighted for further improvement in the second national communications. The consultation workshop thus served to obtain stakeholder interest in the second national communications and obtain input into the preparation and design of the second national communications. The stakeholders involved in the consultations and the stocktaking process are identified in the matrix below.

Review of the Initial National Communications

The initial national communications occurred in two phases. The first phase allowed Barbados to prepare and submit its initial national communications to the UNFCCC in November 2001. Barbados utilized decision 10/CP.2 to prepare its first national communications

Chapter 1 of the initial National Communications details relevant information with regards to national circumstances and for the most part it complies with the guidelines for National Communications in 10CP/2. There are some minor improvements which should occur. Table 1.8, for example, presents a summary of Barbados' national circumstances, however, some data relating to adult literacy and urban population as a percentage of total population has not been included because of its unavailability. Some improvement is also needed in the climate section, particularly in relation to reporting on rainfall data, as what is present is not necessarily representative of the wider country.

Chapter 2 of the first National Communications deals with the vulnerability and adaptation to climate change issues. The section identified initial potential coastal zone impacts, impacts on water resources, climate-related disasters, impacts on agriculture and coral reefs and fisheries as the main areas of Barbados' vulnerability to climate change. Adaptation measures and options

were also presented. It notes that there is a need for investigation of the effects of a changing climate on human health, and the socio-economic impacts of climate change, including more comprehensive examination of effects on the tourism sector. Also an examination of the impacts of climate change on the insurance sector, both local and global, needs to be carried out since the region as a whole has seen increases in premiums, and refusals of the industry to cover certain types of coastal structures

Barbados' First National Greenhouse Gas Inventory and Abatement Strategy are located in chapters 3 and 4 of the first National Communications. These were undertaken in accordance with Article 4.1 (a) of the UNFCCC which requires all parties to the Convention to carry out a complete assessment of their anthropogenic emissions and removals of greenhouse gases (GHGs). Barbados has calculated anthropogenic GHG emissions and removals by sink for the years 1990, 1994 and 1997 based on the International Panel on Climate Change (IPCC) Revised 1996 Guidelines for National Greenhouse Gas Inventories. In actuality, the guidelines only required that the inventory be carried out for one base year. Consistent with the IPCC Guidelines, estimations of GHG emissions were made for the following sectors:

- (i) Energy
- (ii) Industrial processes
- (iii) Agriculture
- (iv) Land use changes and forestry
- (v) Waste

For all sectors, the Tier I or simplest methodologies for estimation of emissions and removals were used. In all estimations, default emission factors provided in the IPCC Guidelines were used to estimate GHG emissions for Barbados. This was due to the unavailability of research providing local emission factors that would be applied to the inventory.

The GHG inventory indicated that the focus of abatement efforts and resources in Barbados should be on controlling and reducing:

- (i) Carbon dioxide emissions from fuel combustion for electricity generation;
- (ii) Carbon dioxide emissions from road transportation;
- (iii) Methane emissions from waste management activities; and
- (iv) Methane emissions from agricultural activities.

To facilitate further and more detailed assessment of GHG emissions on a national level, more systematic and sophisticated data collection by Government agencies and documentation of data collection methodologies needs to be carried out for all sectors

The fifth chapter of the first national communications examines policies relevant to reducing vulnerability to and adapting to climate change. It also looks at measures which have been used to implement the convention, financial and technological needs and constraints. This chapter too also fulfils the requirements under decision 10/CP2. It should be noted however that there are no project specific project proposals. For example there are a number of renewable energy proposals but there are no specific project proposals for funding attached. There is also reference to the development of a Renewable Energy Centre but nothing specific in terms of funding requests is attached

With the completion of the first national communications Barbados received additional funding to implement a top up phase. The top up phase included the following activities: (i) A technology needs assessment, (ii) An examination of systematic observation systems and (iii) Public Education and Awareness.

Priorities for the Second National Communications identified from the Stocktaking Process

A number of priorities have been identified as critical activities for the SNC which should be addressed. In terms of vulnerability the tourism sector was highlighted as a sector which needs comprehensive studies. With regards to the coastal sector it was noted from the stocktaking process that there is a need for a more detailed and comprehensive analysis as it relates to coastal vulnerability, with a more comprehensive analysis of the problem of sea level rise. In terms of the susceptibility of the water supply to climate change it was noted through the stock taking process that there is a need to revisit the issue of water and climate change with greater detail in the analysis along with an examination of the vulnerability of the water mains and treatment process to climate change. The impact of climate change in private supply wells needs also to be examined.

Agricultural vulnerability to climate change was also highlighted as key area for further study. There needs to be more information which is given to farmers as they may not be aware of climate change issues. The health sector was also highlighted as an extremely vulnerable sector to climate change and that there is a need to involve the health sector more closely in climate change studies as it relates.

Social impacts assessments have also been noted as a priority for the second national communication, especially as it relates to the number of people at risk from storm surge and sea level rise, as well as the social impacts related to a change in the water supply due to a changing climate. With regards to disaster management and susceptibility to extreme events, it was noted that the information being generated from the pilot projects in the Caribbean Disaster Management Project , implemented by CDERA, should be included in the second national communications along with outputs from the Caribbean Risk Management Initiative.

In terms of the greenhouse gas inventory, there is a need to review the methane statistics, with the examination of all the landfill deposit sites. It was recommended from the stocktaking process that a trend analysis for the inventory is done with the inventory utilizing the base year 2000, as well as 2002 and 2004. An abatement analysis should also be conducted.

With regards to capacity building it was highlighted from the stocktaking process that there is a need to improve data collection and analysis and to build capacity for vulnerability analysis. Adaptation was highlighted as key in terms of documented traditional practices for adaptation as well as identifying suitable adaptation options for Barbados as it relates to a changing climate. Public education and awareness was highlighted as key, and it was noted that there may be a need to incorporate climate change information into the school syllabus.

It was noted that the implementation of the second national communications should occur taking into account other initiatives which are occurring in the environment field within the

Environment Division of the Ministry of Energy and Environment, and in other departments. The Environment Division of the Ministry of Energy and Environment is the focal point with regards to the Desertification Convention and the Biodiversity Convention. The Environment Division is also responsible for implementing the National Capacity Self Assessment project. Other initiatives which are occurring in other government departments in which should be considered include the Caribbean Disaster Management Programme (CDMP) and the Caribbean Risk Management Initiative, which being implemented by CDERA and UNDP respectively through the Central Emergency Relief Organization.

Linkages with other regional projects such as the Mainstreaming Adaptation to Climate Change (MACC) and the Caribbean Renewable Energy Development Programme (CREDP) should also been exploited. Technical and financial resources will also be exploited with regards to the CCCCC, so that all issues are effectively incorporated in to the SNC process

With Ministry of Energy and Environment being the focal point for many environmental conventions issues with regards to sustainable and climate change will be incorporated into the second national communications process. There will thus be information sharing and exchange through the various committees within the ministry which are responsible for implementation of activities related to multi lateral environmental conventions. The stakeholder matrix below outlines the interest and the role in the self assessment process of the various ministries and institutions.

Stakeholders Matrix

Name of institutions / stakeholders consulted	Stakeholder interests, official position or mandate	Reasons for inclusion	Role in the self-assessment process (e.g. consultation, preparation of draft report, data provider)
Environment Division, Ministry of Energy and Environment	<p>Implementation Agency and operational focal point for GEF</p> <p>Climate change focal point</p> <p>Biodiversity and desertification focal point</p>	<p>Responsible for preparation of the first national communications and submission to the conference of the parties</p> <p>Responsible for day to day management of the environment in Barbados</p> <p>Responsible for Climate change</p>	<p>Convening workshop and process</p> <p>Implementation of SNC and assessment process</p>
Ministry of Agriculture	Responsible for development of agriculture and collection of data	Important for strategies on agricultural development, land use and adaptation.	Identification of data which will be required for second national communication, vulnerability and adaptation. Technical advisory role
Barbados Meteorological Services	Collection of meteorological data for analysis. Provision of meteorological services	Required to provide background for vulnerability studies work	Identification of data required for vulnerability studies. Technical advisory role. Identification of capacity building requirements
Town and Country Planning	Responsible for the approval for development of land	Required for background for land use practices with reference to vulnerability studies	Data collection for vulnerability and adaptation studies
Barbados Port Authority Inc	Management of critical infrastructure susceptible to	Required for information related to vulnerability	Identification of data requirements

	sea level rise, and provision of data as it relates to tourism arrivals	studies	
Barbados Light and Power	Sole electrical generating utility responsible for production and distribution of electricity	Critical to the greenhouse gas inventory and abatement strategy	Key data provider for green house gas inventory
Barbados Water Authority	Management and distribution of water. Maintenance of distribution infrastructure	Provision of data for vulnerability studies in the water sector	Provision of data and identification of capacities required for vulnerability work
Central Emergency Response Organization	Disaster Management, coordination and response	Identification of areas susceptible to climate change, vulnerability risk	Provision of data, public awareness and preparation for climate change impacts
Ministry of Economic Affairs	Management of economic issues and affairs	The effect of climate change on the economy	Background data for national circumstances
Barbados Environmental Society	Major non governmental organization, environmental group	Advocacy and awareness relating to climate change and general environmental issues	Public awareness on climate and identification of local activities related to climate change
Ministry of Education	Management of education issues in Barbados	Education and climate change issues and syllabus requirements	Public awareness and education strategies as it relates to climate change
Energy Division, Ministry of Energy and Environment	Responsible for the collection of energy data	Required to provide data in the energy sector. Responsible for renewable energy projects	Provider of data, and identification of capacity requirements
Barbados Agricultural Development and Marketing Corporation	Development of agricultural projects. Assist with rural development	Provision of data on projects and for impact and vulnerability studies	Identification of data and capacities required

Ministry of International Transport	Responsible for management of international transport sector	Data on international transport sector- airplanes, shipping etc	Provision of data on transport sector
Food and Agricultural Organization	Aid in improving agriculture in Barbados	Provision of data and technical services with regards	Identification of capacity requirements for vulnerability work in agricultural
Centre for Environmental Resource and Management Studies, University of the West Indies	Provider of post graduate course in climate change	Identification of climate change vulnerability issues and greenhouse gas issues	Identification of capacity requirements and data needs
Ministry of Health-Sewage and Solid Waste	Government department which is responsible for the management of solid waste	Environmental health matters related to solid waste disposal	Provision of data, re solid waste disposal sites
Advocate Newspaper	National Newspaper	Increasing public awareness with regards to climate change	Public awareness
Caribbean Youth Environmental Network	Promotes environment and development education and awareness in youth	Involved in many projects which relate to environment, development and climate change	Public awareness and education in youth

APPENDIX B: TECHNICAL COMPONENTS OF THE PROJECT PROPOSAL

1. BACKGROUND/CONTEXT

Barbados is a small island state located in south eastern Caribbean at 13.1N and 59.32W. The population of Barbados is approximately 270,000, with a land area of 431 sq km and thus Barbados is one of the most densely populated countries in the world. Barbados signed the United Nations Framework Convention on Climate Change (UNFCCC) on 12 June 1992 and ratified the UNFCCC on March 23 1994. Barbados acceded to the Kyoto Protocol on August 7th 2000

As a small island State, Barbados faces many challenges which are typically associated with small island States which have been outlined in the Intergovernmental Panel on Climate Change Third Assessment Report, and these include (i) Limited physical size, which effectively reduces some adaptation options to climate change and sea level rise, (ii) Generally limited natural resources, (iii) High susceptibility to natural hazards, (iv) Thin freshwater lenses which sensitive to sea level changes, (v) Open economies susceptible to market shock and relative isolation and distance from major markets (vi) Dependence on imported energy products and (vii) Limited funds and human resource skills which limit capacity.

Barbados obtained independence from the United Kingdom of Great Britain in 1966 and historically the Barbados economy was based on agriculture with the cultivation of sugar cane. However with the changing international trading regimes, the economy has diversified and tourism is now the mainstay of the economy along with the provision of financial services. Barbados is a member of the Caribbean Community (CARICOM) and is involved in many activities to improve regional cooperation and integration such as the Caribbean Single Market and Economy. Despite of the difficulties of being a small islands state Barbadians enjoy a good standard of living and this was confirmed by the United Nations Human Development Report 2004, which ranked Barbados 29th among 175 developed and developing states and as a leading developing country.

The initial national communications aided in the development of capacities for Barbados to address climate and developed some local expertise with regards to the issue of climate change generally and specific issues such as greenhouse gas inventories and sectoral vulnerabilities. The initial national communications highlighted Barbados's vulnerability to climate change, and noted that the majority of emissions in Barbados arise from the production of electricity. Barbados has a long history in terms of renewable energy, and has a well established solar hot water industry. With abundant renewable energy resource there are many opportunities for renewable energy projects such as wind, solar and wave.

Barbados is susceptible to extreme weather events such as hurricanes and tropical storms. Climate change in the form of sea level rise and changing weather patterns will have negative impacts in Barbados, thus adaptation to climate is a priority as climate change threatens the fabric of life in island such as Barbados.

The Environment Division of the Ministry of Energy and the Environment will be responsible for implementing the SNC project. The SNC project will build upon the initial national communications, improving the work which was already completed

2. PROJECT OBJECTIVES

Project Development Objective:

The project will allow Barbados to address climate change concerns, strengthen technical and institutional capacity and identify adaptation options, as well as propose climate change projects for implementation.

Project Immediate Objective:

The project will enable Barbados to prepare and submit its second national communication to the UNFCCC and meet its Convention obligations”

3. PROJECT STRATEGY

The SNC project will allow Barbados to fulfill its commitments under the UNFCCC. This will be achieved by capacity building, and strengthening relevant institutions. Public awareness and education activities along with training will be used to aid the implementation of the project. Local and regional expertise will be used to aid in the implementation of the project. There will be collaboration with the CCCCC and the MACC project to ensure that there is the utilization of regional expertise, as well as access to regional resources. The project will also cooperate with the CDERA and CREDP.

See also section 1.2 Appendix A

4. PROJECT ACTIVITIES

4.1 National circumstances

The SNC will provide climate data, environmental data and the latest socio-economic data of Barbados. The development plans of Barbados will also be included in the national circumstances chapter. The background data on Barbados is necessary as it will provide the basis for understanding the vulnerability of Barbados to a changing climate. Information related to the institutional arrangements for the preparation of communications will be included along with population data,(growth rates, density etc) and the latest data on the economy. There will also be an analysis of the incorporation of climate change activities into local policies, activities, and development priorities. The national circumstances will be consistent with decision 17.CP8 of the UNFCCC. Indicative activities are outlined in the project work plan.

4.2 Greenhouse gas inventory

The greenhouse gas inventory is one of the major components of the SNC. It provides the background for climate change mitigation activities, and can aid in providing the correct data for the implementation of various government projects.

The greenhouse inventory for Barbados will be conducted utilizing decision 17/CP.8, with the year 2000 being the base year for the inventory. Greenhouse gas inventories will also be conducted utilizing the years 2002 and 2004 respectively. This will occur so as to get a comprehensive trend analysis for greenhouse gas emissions in Barbados. The greenhouse gas inventory for Barbados will cover all sources and sinks of the following gases CO₂, N₂O, CH₄, NO_x, SO_x NMVoC. In addition there will be estimates of HFCs, PFCs and SF₆. With regards to bunker fuels these will be reported separately as instructed by the guidelines. The greenhouse gas inventory will use the IPCC revised guidelines for National Greenhouse gas inventories. The sectoral and reference approach to estimating emissions will be used.

The IPCC Good Practice Guidance in Uncertainty Management in National Greenhouse Gas Inventories will also be used, so that estimates of the key sources and any uncertainty will be addressed. While Barbados does not possess much forest the IPCC Good Practice Guidance for Land Use Change and Forestry will be used where appropriate. Both sectoral and reference approaches will be used to improve the inventory, to aid in the removal of uncertainty

There will be cooperation with key organizations such as the Barbados Light and Power, the Arawak Cement Company, the Energy Division of the Ministry of Environment and Energy, the Ministry of Public Works and the Ministry of Economic Affairs as they are sources of key data. There are considerable data gaps which have to be filled as there is some private generation of electricity in Barbados.

With regards to emission factors, country specific emission factors will not be developed and IPCC emission factors will be utilized. There will be cooperation with the regional climate change centre with regards to emission factors and if regional emission factors are available they will be utilized.

Training will be important with regards to the inventory. All training opportunities which are available regionally and internationally will be utilized, especially those which are being facilitated through the UNDP NCSP. Work in the SNC will also focus on maintaining technical and institutional capacity as it relates to the inventory, and placing an appropriate data collection system in place. Computer equipment, hardware and software will be obtained so as for the greenhouse gas inventory.

The major outputs of this component will include inter alia:

- An updated improved greenhouse gas inventory for the years 2000, 2002 and 2004
- An improved methodology for the collection of data
- Strengthening institutional capacity for greenhouse gas inventories

- Identification of issues related to inventories, IPCC guidelines and small island developing states
- Recommendations on areas for improvement for future inventories

Indicative activities are outlined in the project work plan.

4.3 Programmes containing measures to facilitate adequate adaptation to climate change

As a small island developing state the vulnerability and adaptation component of this the SNC is extremely important, as it will aid in providing possible adaptation options for Barbados for climate change. The SNC will improve upon previous work which has been done through the Caribbean Planning for Adaptation to Climate Change project (CPACC), and the INC. The ongoing work of the MACC project will also be used in terms of its outputs related to vulnerability and adaptation.

The vulnerability analysis will expand on the work presented in the INC. Local and regional expertise will be utilized. Capacity building will be key in this component, through training, as well as data collection. Cooperation with the MACC and CCCCC will be key as it relates to building capacity. Initiatives of the UNDP NCSP and other international organizations will also be used to facilitate training of local technicians and link directly into the vulnerability assessments.

From the stocktaking process and review of the INC a number of areas have been highlighted for further work, these include inter alia:

- The Coastal Sector
- The Water Sector
- The Agricultural Sector
- The Tourism Sector
- The Social Sector and Human Settlements
- The Health Sector

With regards to the coastal sector there needs to be further and more detailed analysis of the possible effects of sea level rise particularly as it relates to storm surges and coastal erosion. The effect of climate change and its impacts on the social sector in terms of dislocation of human settlements also needs further and more comprehensive analysis, particularly as it relates to the impact of climate related disasters

There will be an impact analysis of climate change and the water sector, particularly as it relates to the vulnerability of public supply wells, private supply wells and the mains and treatment processes to climate change. Social impacts will be examined as it relates to water and the amount of water which is actually used by agriculture. In terms of agriculture there will be detailed analysis of the impacts of climate change and various crops which are cultivated in Barbados, particularly as it relates to food security.

The economy of Barbados is now mainly based on tourism thus the impacts of a changing climate on this sector will be examined, not only from the biophysical effects of climate change but from the impact of changing patterns of arrival of tourists due to climatic change.

There will be an analysis of the impacts of climate change and health, building on the outputs of regional projects which have looked at the linkages between a changing climate and dengue fever, as well as work which the Pan American Health Organization is doing as it relates to climate change and health in Barbados and the rest of the Caribbean

The vulnerability studies will be done utilizing the latest scientific methodologies. The relevant regional and global models will be used to compose and construct climate change scenarios for the vulnerability and impact studies. Currently there are a number of initiatives through the CCCCC, and the University of the West Indies which are looking at regional climate scenarios and the outputs of these initiatives will be used to aid in the impact assessments. Where possible quantification of impacts will occur especially as it relates to the impact on social structures and economic activities. The outputs of the impact assessments will be used to examine the effect of climate change on ongoing national development strategies and plans and appropriate policy responses and strategies will be developed.

The appropriate methodological tools will be used where appropriate for the impact analysis as well as for the identification of adaptation options, for example: (i) the IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptation, (ii) the UNDP Adaptation Policy Framework and (iii) UNEP Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies. In recent times the Caribbean has developed a methodological approach to climate change adaptation which will be used where appropriate. There will be a focus on the identification of traditional knowledge practices as it relates to adaptation options, and technologies for adaptation. In addition a review of policy and legal frameworks will occur to aid the identification of appropriate adaptation technologies and options. Adaptation options will be evaluated and prioritized where appropriate. There will also be a focus on disaster prevention as it relates to climate induced natural disasters

The vulnerability and adaptation studies will involve a number of stakeholders, and public involvement will be key in highlighting the vulnerabilities and selecting appropriate adaptation options. Capacity building and training will be important elements in this component of the SNC

The major outputs of this component will include inter alia:

- Capacity building and training in climate models and various sectoral impact assessment models
- Vulnerability analysis in key sectors such as tourism, agriculture, health, human settlements and coastal infrastructure
- Identification of appropriate adaptation policy options and technologies

Indicative activities are outlined in the project work plan.

4.4 Programmes containing measures to mitigate climate change

Barbados is not required to undertake emissions reduction commitments; however mitigation activities could provide significant benefits in terms of sustainable development, and energy security. The purpose of the mitigation component of the SNC is to have an abatement analysis as well to document initiatives which are already underway to reduce greenhouse gas emissions.

As with many other small island developing states Barbados is dependant in imported fossil fuels, which has high financial costs associated with it, thus viable options for mitigating climate change will aid in reducing the dependence on imported fuels as well as promoting energy alternatives.

Currently there are a number of renewable energy initiatives which are ongoing in Barbados. These relate to wind, solar and waste to energy, however there is still an underlying belief in many instances that renewable energy is not cost efficient, effective or reliable.

There will be an analysis of Barbados greenhouse gas emission trends and the identification of activities which can occur to aid in emissions reduction. Computer modeling and analysis will occur utilizing programmes such as Long range Energy Alternatives Planning System, which is a software tool for integrated energy-environment and greenhouse mitigation analysis. There will be capacity building and training with regards to mitigation related issues and appropriate computer models.

There will be analysis between the linkage of economic growth and energy costs, as well as important analysis on the competitiveness and the feasibility of many renewable energy technologies for Barbados, particularly those which are suitable for small islands such as Ocean Thermal Energy Conversion (OTEC). This will include economic and financial analysis, along with market feasibility studies. Issues related to energy conservation and efficiency will also be addressed and there will be cooperation with the CREDP project.

This component will involve key inputs from the Barbados Light and Power (BL&P), the Energy Division of the Ministry of Energy and Environment, nongovernmental organizations and the CCCCC. Suitable projects for mitigation will be identified.

The outputs of this component will include inter alia:

- Capacity building and training related to mitigation analysis
- An assessment of mitigation options, based least cost scenarios
- Identification of appropriate mitigation technologies, programmes and policies
- Analysis of the true competitiveness of renewable technologies

Indicative activities are outlined in the project work plan.

4.5 Other information considered relevant to the achievement of the objective of the Convention

This area of the SNC will be used to provide information on other activities which are being implemented in Barbados, which aid Barbados in meeting its commitments under the UNFCCC. Work in the areas of the UNCCCD and the CBD which relate to climate change will be included. The outputs of the national capacity self assessment will also be discussed here along with any inter related work which is ongoing in Barbados as it relates to the Montreal Protocol

Through the top up phase of the INC initial issues related to technology, with regards to needs assessments have been identified. Information as to how the transfer of technology is occurring in Barbados will be documented. Issues arising from the technology needs assessment will be addressed, and gaps will be filled.

Local efforts with regards to improving climate data related to systematic observation systems will also be considered. The top up phase of the INC identified technology need requirements as it relates to improving systematic observation and the participation of Barbados, in GCOS. There are a number of climate modeling efforts which are underway in the Caribbean, which should be documented. There is a need to look at rainfall data and extreme events and the relationship with ENSO under certain climate change scenarios, and this work will be linked to the vulnerability and adaptation components of the SNC

Local and regional social and economic policies will also be examined with regards to their relationship with climate change and efforts to integrate climate change. Sustainable development plans and policies will also be examined. Capacity building measures at the local and regional levels will also be mention and examined in the context of the capacity building framework under the UNFCCC.

An important area which has been which has been identified in the INC for further work is the area of public awareness and education. The top up phase of the INC involved an initial survey to have a preliminary understanding of how the public view climate change. One activity which will take place will be the establishment of a website to facilitate information as it relates to climate change and the environment. There will also be the production of climate change information materials. Given that tourism is a key sector of the economy a local hotel will be adopted and an awareness programme for guests and employees on the issue of climate change will occur. Thus will be related to the overall regional strategy for public education and awareness in the MACC and the CCCCC

The outputs of this component will include inter alia:

- Production of climate change education material and website
- Additional work on technology related issues
- Information related to integration of climate change into local and regional policies
- Identification of efforts to improve systematic observation

Indicative activities are outlined in the project work plan.

4.6 Constraints and gaps, and related financial, technical and capacity needs

This component of the SNC will highlight the difficulties and provide information on the constraints and gaps related to the financial and technical and capacity needs of Barbados as it relates to the SNC. Special consideration will be given to those areas which have been reported in the INC and its top up phase. Although there will be the identification of technical and financial constraints from the other sections of the SNC, they will be expanded in this section. Issues related to barriers to the implementation of the UNFCCC and its processes will be included in this section

This component will thus look at the status of constraints and gaps from previous work, and new constraints and gaps which may have arisen. Activities which have been put in place related to previous constraints. Constraints related to technology transfer, and capacity building will also be located here. Ways to overcome these constraints will be identified, along with suggested improvements for the national communications process.

Project proposals, ideas, capacity and technological needs will be documented here, along with an analysis of drawing from the outputs of other components of the SNC and other related process such as the NCSA and other related enabling activities such as those related to biodiversity. National resources which will be used in the SNC will be documented here.

Indicative activities are outlined in the project work plan.

5. Institutional Framework for Project Implementation

The Environment Division of the Ministry of Energy and Environment will be responsible for implementing the project. The Environment Division of the Ministry of Housing Lands and the Environment is currently the GEF focal point and is responsible for a number of other multi-lateral environmental agreements, thus will allow for synergies with regards to the projects. The project will strengthen the Environment Division as well as other governmental organizations

A national climate change coordinator will be put in place to manage the day to day activities of the project and liase with the UNDP. The national climate change coordinator will report to the Permanent Secretary of the Ministry of Energy and Environment. There is already a national climate change committee in place which will provide additional technical oversight and review progress of the project. The national climate change committee consists of representatives of various ministries such as Town and Country Planning, the Ministry of Agriculture, the Meteorological Service and Economic Affairs. Nongovernmental organizations are also represented on the National Climate Change Committee.

Short and medium term consultants will also be contracted as appropriate to aid with the implementation of the project, particularly the technical aspects such as the greenhouse gas inventories, vulnerability studies, abatement analysis and adaptation studies

The Environment Division of the Ministry of Energy and Environment will thus have full responsibility for the implementation and will provide administrative and financial support.

Public awareness support will also come through the Environment Division of the Ministry of Energy and Environment.

6. Assessing project impact

At the beginning of the project, a practical framework to assess capacity development and the potential impacts of the national communication process will be developed. The framework will identify practical indicators to assess the impacts of the SNC in incorporating climate change concerns into development and sectoral planning, as appropriate. The project management will collaborate with the National Communications Support Programme (NCSP) on developing an impact assessment framework, linked to the different components of the SNC, and the possible indicators that may be used to assess impacts.

The development of the framework will be a country-driven process that seeks to bring the SNC process closer to development priorities in the context of national policy-making, and is aimed at designing an impact assessment framework that meets the country's needs and priorities in terms of facilitating the linkage between the SNC and development issues.

In assessing the impact of the project a number of activities will occur. There will be activities related to reporting requirements for the UNDP. UNDP guidelines, monitoring and evaluation procedures will be utilized throughout the process. Quarterly reports will be provided to the UNDP by the Environment Division. Quarterly reports and updates will also be provided to the national climate change committee. There will be a mid term review of the project. GEF reporting requirements will also be followed. There will be an independent financial audit at the end of the project along with a review of the project.

Capacity building activities are to occur throughout the project along with a number of public awareness activities, which are intended to increase and foster awareness as it relates to climate change.

7. Budget

See section 2

Detailed Workplan

Outputs and Activities	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.Implementation Procedures and Arrangements												
1.1 Institutional Arrangements, obtain project staff												
1.2 Climate change committee meetings and project initiation workshop												
2 National Circumstances.												
2.1 Collection data from relevant organizations												
2.2 Update information, fill in data gaps from first national communications												
2.3. Draft national circumstance component/chapter												
3. Greenhouse Gas Inventory												
3.1 Greenhouse gas initiation and training workshop, examining IPCC guideline, select methodologies for new gases where appropriate												
3.2. Review data from initial inventories												
3.3 Identify key emission sources												
3.4 Gather data for greenhouse gas inventory												
3.5 Undertake inventory for years 2000, 2002 and 2004 assessing uncertainties												
3.6 Design improved data collection system for GHG, archive data												
3.7. Prepare draft inventory report.												
3.8 Workshop to present inventory												
3.9 Review Inventory												
3.10 Finalize Inventory Report												
4.Programmes containing measures to mitigate climate change												
4.1. Review of previous work on mitigation, outputs of regional renewable energy projects												
4.2. Workshop training in computer programmes such as LEAP and other programmes												
4.3.Develop mitigation scenarios												
4.4 Application of mitigation scenarios and abatement analysis												
4.5.Comparative economic analysis on renewable energy options study												
4.6. Draft abatement analysis report												
4.7 Draft Economic analysis report												
4.8 Mitigation and abatement analysis final reports and workshop												
5. Programmes containing measures to facilitate adaptation to climate change												
5.1 Initiation and training workshop on vulnerability assessment methodologies and adaptation. Scenario development												
5.2 Preparation of specific terms of reference for sector vulnerability studies, e.g. Coastal, water, tourism, social, health agriculture.												

Outputs and Activities	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5.3 Vulnerability and adaptation studies.												
5.4 Study on traditional knowledge and adaptation												
5.5 Review the status of the relevant policy and legal frameworks for climate change												
5.6 Workshop and Review of vulnerability and adaptation reports												
5.7.Finalization of Vulnerability and Adaptation reports												
6. Other information considered relevant to the achievement of the objective of the Convention.												
6.1 Review of technology needs assessment. Identification of gaps, related to TNA and systematic observation												
6.2 Development of public education programme. Website development												
6.3 Analysis of local and regional policy information related to climate change												
6.4 Compile and analyse information on capacity building activities related to capacity building framework												
6.5 Draft and review chapter												
7. Constraints and gaps, and related financial, technical and capacity needs.												
7.1 Draft analysis of technical , financial needs												
7.2 Draft project proposals.												
7.3 Finalize chapter.												
8. Preparation and submission of SNC1. Develop climate trends and risks												
8.1 Compilation of Draft SNC report												
8.2 Final workshop to complete SNC												
8.3 Finalization of SNC and submission												

Appendix C: Terms of Reference

1. National Climate Change Project Coordinator

Reporting to the Permanent Secretary of the Environment Division of the Ministry of Housing, Lands and the Environment the National Climate Change project coordinator will be responsible for the day to day management and operations of the SNC. The National Climate Change project coordinator will be responsible for the planning, management and activities of the SNC, ensuring that there is effective use of the funds, and that activities are completed in a timely manner.

Specifically the duties and responsibilities of the national climate change coordinator shall include inter alia:

- Preparing a detailed work plan for implementation of the project
- Manage the day to day activities of the project, including all the financial aspects of the project
- Supervise the project ensuring that all activities are completed in a timely manner
- Prepare the terms of reference for required consultants and supervise consultants, and technical advisors
- Organize the procurement of services and goods under the project
- Organize all the relevant workshops and training courses which will be required under the project
- Liase with UNDP with regards to the implementation of the project, and prepare regular reports on the status of the project
- Coordinate and act as a secretary to the National Climate Change Committee
- Coordinate with the relevant ministries, NGO and other organizations such as the University of the West Indies
- Coordinate the preparation of the second national communications report for submission the Conference of Parties, ensuring that the report meets all the relevant guidelines.

Qualifications, Experience and Skills

- A post graduate qualification in environmental science, management or a related discipline
- Three to five years experience working in a government department, with an understanding of governmental processes
- A comprehensive understanding of the UNFCCC and its political dimensions and negotiation processes
- Knowledge of UNDP project procedures.
- Good communication skills, along with excellent computer knowledge
- Project Management skills

2 Climate change technical adviser/consultant

Reporting to the national climate change project coordinator the climate change technical adviser/consultant will be required to support the implementation of tasks which may require an in depth knowledge of climate change adaptation and mitigation as well as the UNFCCC negotiation process as it relates to the SNC. The climate change technical advisor will aid in the recruitment of other technical consultants and aid in the supervision of the key critical components of the SNC such as the greenhouse gas inventory and the vulnerability and adaptation component. The climate change technical advisor will aid with the production of the second national communications as well as provide government technical advice on climate change issues. The climate change technical advisor will have a comprehensive understanding of the latest climate change science

Specifically the duties of the climate change technical adviser consultant will include inter alia:

- Identify all the current climate change and other related environmental activities which are ongoing locally, regionally and internationally and their relationship with the SNC, ensuring that linkages are established and synergies exploited
- Assist the project coordinator with the preparation of specific terms of reference for specialist consultants
- Assist the project coordinator with management of the SNC and consultants
- Aid consultants with the greenhouse gas inventory and abatement strategies and studies
- Assist with the vulnerability and adaptation components
- Ensure that there is compliance with relevant UNFCCC decisions
- Assist with developing negotiation positions at COP and attend UNFCCC meetings
- Identification of suitable training and capacity building activities
- Assist in with the preparation and submission of the SNC

Qualifications, Experience Skills

- An advanced degree in environmental management, or science with 5-8 years international experience with UNFCCC and climate change issues
- Previous experience working with national communications and other local climate change projects
- A comprehensive understanding of the guidelines for national communications, and previous experience working with greenhouse gas inventories
- Experience working with vulnerability risk assessments and identifying adaptation options
- Communication, negotiation and computing skills

3. Draft Terms of Reference Greenhouse Gas Inventory and Abatement Analysis Studies.

The greenhouse gas inventory for Barbados will be conducted for the years 2000, 2002, and 2005. Collaboration and work will have to occur with the Ministry of Energy and Utilities, the Ministry of Public Works the statistics department, the Barbados Light and Power and the Arawak Cement Factory and the technical advisor on climate change. The inventory will be done in accordance with guidelines in the annex to decision 17/CP.8

There will be training in greenhouse inventories and the IPCC methodology and a workshop for key organizations. The initial workshop will have training and complete a comprehensive work plan for the inventory

The greenhouse gas inventory study will

- (i) Collect and obtain the relevant data to complete inventories for the years 2000, 2002 and 2004, calculating emissions for all the various sectors
- (ii) Identify data gaps for key sectors
- (iii) Propose solutions to overcome any data gaps
- (iv) Archive any data which is collected
- (v) Propose new data collection systems for key organizations where appropriate
- (vi) Design a data collection system for the Environment Division.
- (viii) Identify potential projects to reduce greenhouse gas emission based on the inventory

The abatement analysis will commence upon the completion of the greenhouse gas inventory and utilizing the greenhouse gas inventory the abatement analysis will”

- (i) Utilizing relevant computer models, projected development plans, the greenhouse gas inventory and considering all the relevant social and economic data, develop a baseline and mitigation scenarios to abate the increase of greenhouse gas inventories
- (ii) Identify and formulate programmes and measures to aid with mitigation
- (iii) Provide an effective economic cost benefit analysis for Barbados for the application of renewable technologies specific for small island states such as Ocean Thermal Energy Conversion and solar.

A workshop will be held to present and finalize the abatement report

3. Terms of Reference Initial Vulnerability and Adaptation Workshop

An initial vulnerability and adaptation workshop will be held, the purpose of this workshop will be to identify the key components which will be needed for the vulnerability and adaptation studies.

The workshop will:

- (i) Review the relevant methodologies and tools for vulnerability assessment
- (ii) Analyze climate data for Barbados
- (iii) Examine climate change scenarios for the Caribbean and outputs of recent studies on scenario building
- (iv) Review approaches to adaptation, such as the UNDP Adaptation Framework and Caribbean approaches to adaptation
- (v) Review past vulnerability assessments

The workshop will set the background for the vulnerability studies in the various sectors and aid in drafting the specific terms of reference for the relevant studies, and the selection of the appropriate models and tools for the various vulnerability assessments.

4. Terms of Reference National Climate Change Committee

The National Climate Change Committee will provide technical support and oversight to project activities. The national climate change committee will evaluate the project and aid in supervising the outputs of project. The members of the National Climate Change Committee will be appointed by the Permanent Secretary of the Ministry of Energy and Environment. The National Climate Change will provide a policy and technical platform for the project. The National Climate Change Committee will have the following duties and responsibilities:

1. Providing technical assistance and support during implementation process of project activities.
2. Review and monitor all technical project components.
3. Review and make necessary comments on draft documents and offer guidance on the status of the implementation of the project activities and problems.
4. Promoting awareness among key stakeholders of climate change issues and concerns
5. Facilitating exchange and dissemination of information on climate change among technical agencies and provide recommendations to policy makers and the general public on matters related to climate change.
6. Overseas national policies on climate change

Generic terms of reference for scoping and implementing the V&A component of the National Communication

These generic terms of reference for the preparation of the V&A studies identify the basic set of activities that the V&A expert/consultant will be responsible for under the supervision of the National Communication's Coordinator. It is important to note that these generic terms of reference do not intend to limit the work of the expert but to guide countries on the general profile of the V&A expert and on the activities generally expected to be carried out.

Profile of the V&A expert/consultant

The V&A expert should be very knowledgeable and with hands-on experiences on V&A issues, have a solid understanding of the gaps and needs for developing/improving vulnerability assessments, and have technical expertise in the formulation of adaptation options. The V&A expert should be able to scope technical studies in the V&A area and design an implementation strategy to carry out the different V&A activities within the framework of the NC. He/She should also have a solid understanding of the institutional arrangements and resources required to carry out the V&A work.

Although the NC project document already provides the framework for the V&A studies, the expert should be able to advise on any adjustments if needed, both at the organizational and technical levels, for a successful implementation of the V&A studies.

Activities

In general, the V&A expert/consultant should be responsible for ensuring that the following set of activities is carried out. Emphasis on different activities will depend on the scope of the work already described in the NC project document and/or on the specific activities the V&A expert would be assigned to.

Policy and institutional issues

1. Identify the key policy issues the V&A study of the SNC project aims to address, e.g.,
 - a. to scope the scale of risks associated with projected climate change;
 - b. to aid in the identification of priorities for adaptation;
 - c. to support the development of a national adaptation strategy.
2. Identify the expected output of the V&A study of the SNC project on the basis of the project document, e.g.,
 - a. impacts assessment at the sectoral level for the given priorities identified in the project document;
 - b. a national adaptation strategy, including policies, programs and projects.
3. Develop a clear strategy to link the V&A outputs to national development planning. This would include, among others:
 - a. assessment of institutional arrangements/stakeholders engagement required to facilitate linking the outcome of the V&A studies to sectoral or national planning;

- b. framework for assessing how the above linkage can be monitored and measured in the short and long terms, for instance through the development of practical indicators.

Technical issues

Scope of the V&A study

4. Elaborate on the scope (geographic, thematic, sectoral coverage, time horizon) of the V&A study, e.g.,
 - a. designing a strategy to build on but advance what was done within INC, and while applicable, NAPA project;
 - b. elaborating on the scope of studies to address sectors/regions not covered by INC, sectors/regions identified as sensitive/vulnerable to climate change, as per the NC project proposal;
 - c. preparing a detailed workplan for each of the study to be carried out, including a strategy to involve the relevant stakeholders, timeline, etc.;
 - d. designing a strategy, as applicable, to link the V&A studies with previous and ongoing related projects/activities (e.g., land degradation, biodiversity, international waters.)

Methodological framework

5. Elaborate on the overall methodological framework for the V&A study as per the project document and in consultation with the project coordinator. In doing so, the V&A expert should ensure that:
 - a. The proposed methodological framework is the most appropriate given the policy questions to be addressed, the characteristics of the study (e.g., sectoral focus, spatial and temporal scales, stakeholders involved, and data requirement, etc.), and data availability;
 - b. In-country expertise required for such a methodological framework is available. If needed, the V&A expert should develop a strategy to address technical capacity gaps. For instance, by exploring the possibility of applying another framework in which more in-country expertise exists, or by designing a training/technical backstopping strategy, etc.

Scenarios development

6. Identify the types of scenarios required to conduct the V&A assessment, e.g., climate, socio-economic, sea level, adaptive capacity, technology, land-use land-cover.
7. Identify the temporal and spatial resolution needed for these scenarios (e.g., national, sub-national, watershed, community, farm level, multi-decadal average, annual, monthly, daily, mean conditions, extreme events, etc.). In doing so, the expert should justify the choices.

8. Develop the strategies for developing such scenarios, e.g., model-based, expert judgment, etc.

In the preparation of the scenarios development strategy, the expert should assess the feasibility of the scenario needs and the methods for developing these scenarios, given the characteristics of the studies, and data availability. For instance, the expert would be expected to advise on alternative options to running regional climate models or other resource intensive and time consuming exercises. The V&A expert would also assess whether there is enough in-country expertise to develop such scenarios and/or identify options to address the needs for additional expertise.

Sectoral assessment (to be considered by each of the sectors to be covered in the V&A study)

9. Elaborate on the methods and tools, as per the project document, chosen to undertake sectoral assessments, e.g., numerical models, elicitation of expert views, stakeholder consultations, focus groups, etc. In doing so, the expert will advise on any adjustments needed to the options identified in the project document.
10. Provide justifications for the selection of the methods/tools considering the research questions, characteristics of the study, and requirements of data and technical expertise of these methods/tools.
11. Assess in-country expertise required to apply the selected methods/tools and prepare training/technical backstopping strategy as required.
12. Develop a strategy to integrate findings from sectoral assessment, as needed. For instance, by applying an integrated model, synthesizing sectoral information, etc.

Technical assistance needs

13. Develop a technical backstopping/training strategy to strengthen the national capacity needed to carry out the different V&A studies, This would include details on the type of support needed (training courses on particular methodological frameworks/tools, guidance material, technical documents and good practice) and the, timeline for such support.

