

UNITED NATIONS DEVELOPMENT PROGRAMME

PROJECT DOCUMENT

**ENABLING ACTIVITIES FOR THE PREPARATION OF
BELIZE'S SECOND NATIONAL COMMUNICATION
TO THE
UNITED NATIONS FRAMEWORK CONVENTION ON
CLIMATE CHANGE**

**Belize
March 2006**

UNDP Project Document

Government of BELIZE

United Nations Development Programme

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

PIMS 3299 CC EA SNC Belize

This project will enable Belize to prepare its second national communication to the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC). This exercise will incorporate the findings and recommendations of the 2005 National Capacity Self-Assessment and climate change self assessment exercises as well as recommendations from consultation workshops. Main components of the project are: (a) an inventory of the greenhouse gases for the years 1996 and 2000 utilizing the IPCC guidelines; (b) vulnerability assessments of the impacts of climate change and adaptation measures for certain development and environment sectors in Belize not addressed in the first exercise; (c) research to improve the quality of information in some specific inventory sectors such as Energy and Land Use Change and Forests; and (d) preparation of the Second National Communication of Belize to the Conference Of the Parties.

During the period of the project, efforts will be made to improve the public's access to climate change information. Cross-cutting issues will be addressed to further the effort to achieve synergy between the UNFCCC and the UN Conventions to Combat Desertification and on Biological Diversity. By the end of the exercise, additional capacity to implement the Convention will have been gained at the systemic, institutional, and individual levels.

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LIST OF ACRONYMS

ACCC	Adaptation to Climate Change in the Caribbean
AIJ	Activities Implemented Jointly
BEL	Belize Electricity Limited
BPOA	Barbados Programme of Action
BSI	Belize Sugar Industries
CARICOM	Caribbean Community
CCAD	Central American Council on Environment and Development
CCCCC	Caribbean Community Climate Change Centre, or
CCC	Climate Change Centre
CCP	Country Cooperation Programme
CPACC	Caribbean Planning for Adaptation to Climate Change
CDM	Clean Development Mechanism
FNC	First National Communication
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GPG	Good Practice(s) Guidance
GWP	Global Warming Potential
IPCC	Inter-Government Panel on Climate Change
IR	Inception Report
MACC	Mainstreaming Adaptation to Climate Change
MNRE	Ministry of Natural Resources and the Environment
MOA	Ministry of Agriculture and Fisheries
NCSA	National Capacity Self Assessment
NEMO	National Emergency Management Organization
NFP	National Focal Point
NICU	National Implementation Coordination Unit
NMS	National Meteorological Service
NSC	National Steering Committee
PfB	Programme for Belize
PMU	Project Management Unit
RBCMA	Rio Bravo Conservation and Management Area
SIDS	Small Island Developing States
SNC	Second National Communication
TOR	Term(s) Of Reference
UB	University of Belize
UNCCD	United Nations Convention to Combat Desertification (Land Degradation)
UNCBD	United Nations Convention on Biological Diversity
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USIJI	United States Initiative for Joint Implementation
UWI	University of the West Indies

Part 1: ELABORATION OF NARRATIVE

1.1 Situation Analysis

Belize is located on the Central American mainland, forming part of the Yucatan Peninsula and lying between 15°45' and 18°30' north latitude, and 87°30' and 89°15' west longitude. It is bounded on the north, west and south by Mexico and Guatemala respectively and on the east by the Caribbean Sea. The total land area is 22,960 square kilometres or (8,867 square miles) of which 95 % is mainland and five % distributed among more than 1,060 islands. Total national territory, including the territorial sea is 46,620 square kilometres (approximately 18,000 square miles). Approximately 69 % of the country remains under natural vegetation cover, and about 70 % of this comprises high broadleaf forests.

Most of the northern half and much of the southern third of the country, along with the entire coastal area and all the islands, are flat and low-lying. The central and western parts of the country are dominated by the Maya Mountains rising to 1,124m above sea level (3688 ft) at its highest point. Belize enjoys a subtropical climate characterized by marked wet and dry seasons separated by a cool transitional period. Like the rest of its Caribbean neighbours, it lies within the hurricane belt. Historically, tropical storms and hurricanes have affected the country once every three years. The hurricanes have resulted in major infrastructural and economic damage on each occasion. Three hurricanes, Mitch, Keith and Iris all affected Belize, causing major damage, in 1998, 2000, and 2001, respectively. Damage assessments have been estimated at Bz \$560 million caused by Hurricane Keith in 2000, and Bz \$199 million by Iris in 2001. Most of the damages occurred in the agriculture and tourism sectors.

The most recent population census was completed in 2000. In that year, the population stood at 249,800, increasing to 256,800 in 2001 and 282,600 in 2004. Average population growth rate of the population over the period 2000 to 2004 is approximately 2.4 % per annum. Approximately 45% of the population lives in the low-lying coastal zone, the region most vulnerable to climate change impacts.

Belize, like other developing countries in the region, needs to continue to utilize its natural resources in the quest for sustainable development. However, the achievement of sustainable development is threatened by the impacts of climate change. Belize's vulnerability to natural disasters has already been demonstrated by the damage caused by hurricanes in the past. This vulnerability is not only the result of increasingly severe natural events like hurricanes, but due to other effects of climate change such as sea-level rise. In the case of the low-lying coastal zone of Belize, sea-level rise will have other serious consequences besides erosion and inundation. The recent long dry periods of 2004 and 2005 revealed other threats. Coastal water supplies from aquifers and wells were showing signs of salt water intrusion. The implications are serious; the potential to effect sustainability of the established population centres, agricultural development, economic activity in the tourism and aquaculture sectors all need to be recognized and addressed. Planning for adaptation to climate change will only take priority when the impacts and threats are well understood throughout the stakeholder population. By the end of this project, a much wider cross section of the population is expected to be aware of and understand the threats posed by climate change.

The general development strategy, therefore, is to provide an enabling environment for private sector participation, along with the public sector investments in managing and integrating planning for climate change into all planning activities. This enabling environment must be created to foster wide stakeholder participation in climate change programmes. The “enabling environment” should comprise of the economic, physical, legal, regulatory, and institutional framework within which planning would be facilitated. Sustainable use of natural resources, conservation of biodiversity, and the general maintenance of high environmental quality are also emphasized. Throughout, there is recognition that the government is not solely responsible for achievement of development goals. All sectors of society have the right and the responsibility to play an active part. Emphasis is therefore placed on participation by civil society in general, including NGOs and the private sector.

In conclusion, Belize is a country with extensive, low-lying, coastal areas vulnerable to natural disasters through tropical cyclones and flooding. Furthermore, the economy is small and concentrated, along with most centres of population, in the very areas that are most vulnerable. Following the threat posed by Hurricane Mitch in October 1998, there has been a review of hurricane preparedness and procedures to mitigate the effects of natural disasters. The scenario of a major disaster such as Hurricane Mitch, and more recently hurricanes Keith and Iris, has served to sensitise the government and general public to climate change issues, mitigation measures, and especially the need for adaptation options.

1.2 Strategy

This project aims to address an area of growing national importance, Climate Change. UNDP Country Cooperation Programme 2002 – 2006 recognized an increase in the country’s vulnerability to climate changes due to the intensified development activities in coastal areas. The low-lying nature of the coastal zone, high proportion of the population living there, and the additional risk from increasingly more frequent tropical storms are some of the contributing factors exacerbating the vulnerability of the country. The CCP highlighted as a priority a need to plan in terms of prevention and recuperation. It is for this reason that project preparers in consultation with governmental focal points recognized the need to incorporate assessments focused on vulnerability and adaptation to climate change events. This area was inadequately addressed in Belize’s first communication report.

The project will help to build additional capacity within the individuals and institutions involved in climate change activities, and conduct vulnerability assessments for certain of the development sectors in Belize. It will also increase the awareness of the impacts of climate change and enable stakeholders to participate in formulation of projects designed either to mitigate the impacts or to build capacity to adapt to the changes.

The project will enable Belize to conduct the second national inventory of green house gases emissions and sinks, greater determine the country’s vulnerability to climate change and allow for more effective national planning to deal with adaptation to climate change. These will provide a basis for Belize’s Second National Communication to the Conference of the Parties.

1.3. *Management Arrangements*

The project will be executed through NEX modality with the Ministry of Natural Resources, Local Government, and the Environment acting as the Designated Institution with direct execution occurring through the National Meteorological Service of the said Ministry. The Chief Meteorologist, who also serves in the capacity of the UNFCCC National Focal Point, will serve as the Project Director.

A sub-group of the National Climate Change Committee (CCC) will participate in the execution as the Project Steering Committee (PSC) and will provide guidance and technical support to the project. Capacity of this committee will be enhanced by the participation of The CARICOM Climate Change Centre (currently hosted in Belize) who will provide technical support during the implementation of the project, while facilitating regional coordination and collaboration with the other Caribbean Countries engaged in the same activities. Greater details and information about management arrangements are described in the section “Institutional Framework for Project Implementation” of the document.

1.4 *Monitoring and Evaluation*

Monitoring responsibilities and events: A detailed schedule of project review meetings will be developed by the project management unit within the first quarter of project execution. This schedule will be developed 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 Director, and the UNDP Country Office based on the project's Annual Work Plan and its indicators. The Project Team is expected to inform the UNDP Country Office 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 its designated institution. The PMU is expected to submit quarterly reports to the country office outlining project progress in relation to the annual work plan and to highlight obstacles to the timely delivery of outcomes. 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 and Reporting: The Project Manager in conjunction with the Project Director and the guidance of the UNDP Country Office is responsible for the preparation and submission of the following reports that 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*

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.

(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 Project 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) in accordance with established procedures set out in UNDP's Programming and Finance manuals. Audits are expected to 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 Belize and the United Nations Development Programme, signed by the parties on 25th August 1992. 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 Belize 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.

Part 2. Budget: Estimates of Costs for the SNC Activities

Award ID:	00036494						
Award Title:	PIMS #3299 CC EA SNC of Belize						
Project ID	00039714						
Project Title:	PIMS #3299 CC EA Second National Communication of Belize						
Executing Agency:	Ministry of Natural Resources, Local Govt. And the Env.						
OUTPUTS (and corresponding indicators)	RESP. PARTY	PLANNED BUDGET					
		Source of funds	Budget Code	Budget Description	Year 1 (USD)	Year 2 (USD)	Total Budget (USD)
1. National Circumstances	NMS	62000	71300	Technical Assistance (local)	1,000	1,000	
<i>Sub-total</i>							2,000
2. National Greenhouse Gas Inventories	NMS	62000	71300	Local consultants	36,000	6,000	
	NMS	62000	72100	International Consultants	20,000	3,000	
	NMS	62000	71600	Travel	6,000	3,000	
<i>Sub-total</i>							74,000
3. Programmes containing measures to facilitate adequate adaptation to climate change	NMS	62000	71200	Technical Assistance (Int.)	10,000	5,000	
	NMS	62000	71300	Technical Assistance (local)	25,000	4,000	
	NMS	62000	71600	Travel	5,000	1,000	
	NMS	62000	71400	Contractual Services	10,000	2,000	
<i>Sub-total</i>							62,000

OUTPUTS (and corresponding indicators)	PLANNED BUDGET						
	RESP. PARTY	Source of funds	Budget Code	Budget Description	Year 1 (USD)	Year 2 (USD)	Total Budget (USD)
4. Programmes containing measures to mitigate climate change	NMS	62000	71200	Technical Assistance (Int.)	6,000		
	NMS	62000	71300	Technical Assistance (local)	20,000		
	NMS	62000	71600	Travel	6,000		
	NMS	62000	72100	Contractual Services	5,000		
<i>Sub-total</i>							37,000
5. Public education & Awareness info, Dissemin & Cap Build.	NMS	62000	71300	Technical Assistance (local)	6,000	3,000	
	NMS	62000	71400	Contractual Services	5,000	2,000	
<i>Sub-total</i>							16,000
6. Constraints & Gaps; Related Financial, Technical & Capacity Needs	NMS	62000	71400	Contractual Services	5,000	3,500	
<i>Sub-total</i>							8,500
7. Techn. Assistance (Techn. Needs Assessment)	NMS	62000	71200	Technical Assistance	25,000	25,000	
<i>Sub-total</i>							50,000
8. Compilation, including Exec. Sum. Production & Dissemination	NMS	62000	71310	Production	4,000	3,000	
	NMS	62000	72510	Dissemination	5,000	2,500	
<i>Sub-total</i>							14,500

OUTPUTS (and corresponding indicators)	PLANNED BUDGET						
	RESP.	Source	Budget	Budget	Year 1	Year 2	Total Budget
	PARTY	of funds	Code	Description	(USD)	(USD)	(USD)
9. Project Management	NMS	62000	71400	Contractual Services	37,500	37,500	75,000
	NMS	62000	72200	Equipment and Software	6,000	4,000	
	NMS	62000	72800	Audiovisual print/technology	26,000	18,000	
	NMS	62000	74200	Audiovisual and Print Prod. Costs	20,000	7,000	
	NMS	62000	74500	Miscellaneous	10,000	13,000	
<i>Sub-total</i>							104,000
10. Monitoring & Reporting	NMS	62000	74100	Reports	3,500	3,500	
	NMS	62000	74110	Audit Fees	2,500	2,500	
<i>Sub-total</i>							12,000
GRAND TOTAL					<u>305,500</u>	<u>149,500</u>	455,000

Part 3. APPENDICES

Appendix A: Summary Report of the Self-Assessment Exercise

1. *Process and approach adopted for the stocktaking exercise*

The self-assessment exercise was performed in accordance with GEF Operational Procedures for the Expedited Financing of National Communications for Non-Annex 1 parties. The stocktake was initiated by consulting with the NFP in order to learn what institutions and individuals had been or were still involved in climate change programmes, projects, or activities. These meetings with the NFP also disclosed information about available reports and their locations. Those discussions were followed by visits to various offices to search for the relevant documents. Reference collections were seldom properly catalogued, but the search concluded with a total of thirty-six documents located and reviewed.

Websites of government ministries and non-government organizations were accessed to search for references to reports on climate change activities in Belize.

A prioritization matrix has been developed for the Thematic Assessment under the NCSA, so those results were incorporated into the exercise for the preparation of the SNC.

The following tools have been used for the stocktaking: (i) desk top review of relevant documents; (ii) electronic communication with resource persons; (iii) interviews with select stakeholders; (iv) focus-group queries; (v) consultation meetings / workshops. Public institutions, non-government organizations, academia, international organizations with representatives in Belize, and the private sector participated in the consultation workshops. (See matrix of stakeholders).

The technical guidance provided by the UNDP-GEF National Communication Support Program (NCSP) through the Caribbean Regional Training Workshop on SNC to the UNFCCC, held in Barbados on 12 and 13 May 2005 was especially useful in preparing the Project Document. The supporting on-line documentation, or distributed documents were utilized in the exercise. The experiences gained during the NCSA project were put into use. The *User Manual for the Guidelines on the Preparation of NC from non-Annex I Parties* prepared by the UNFCCC Secretariat and the *United Nations Development Programme NCSA Resource Kit (Updated October 2004)* also provided useful ideas on ensuring successful stakeholder participation.

This exercise is considered as a necessary step in preparing the proposal for the SNC to the UNFCCC. The report is being used as a basis for the SNC proposal, which provides input to *identify* and *validate* priorities for further surveys /studies and new areas of work to be carried out in the course of the SNC. In addition, it provided an assessment of the gaps, uncertainties, constraints and lessons learnt during previous and ongoing activities. The SNC thus builds upon previous activities, studies, experiences, and institutional arrangements. The stocktaking exercise is *focused on all thematic areas* related to National Communication as indicated by 17/CP8.

The Main objective of the Stock-take exercise is to determine what work has been done in relation to climate change since 1994, the reference year for the First National Communication.

The Stock-take also identified the agencies, institutions, individuals, or partners who participated in the activities.

Belize did not implement any activities under the Top-up phase after completing the First Green House Gases Inventory and the First National Communication.

2. *Summary of the main findings of the assessment*

The main document for this stage of the preparations was a review of Belize's First National Communication to the UNFCCC published in 2002. Other documents included the Caribbean Planning for Adaptation to Climate Change Final report of August 2002 and the 2005 Belize National Capacity Self-Assessment Stock-take and Thematic Assessment Reports.

The assessment revealed that nine government departments; two non-government organizations; two statutory bodies; three private companies; and a few communities in the southernmost district participated in climate change projects between 1992 and 2000.

2.1 National Circumstances

This section of Belize's First National Communication described the profile of Belize for the reference year 1994. It covered the period 1992 to 1996 and depended on availability and accessibility of data and derived information. The section provided information on (1) physical geography {topography, climate, and geology}, (2) demography {population age and structure}, (3) land use {settlements, vegetation cover, and agricultural use }, (4) political structure {political system }, (4) national policy {intermediate goal and development strategy}, (5) national economy {agriculture, services, and trade}, (6) social indicators {labour force, literacy levels, health services, budget distribution}, and (7) the implications for climate change issues ascribed to the described national circumstances.

2.2 Greenhouse Gases Inventory of Emissions and Sinks

The first greenhouse gases inventory for Belize was completed between October 1998 and September 1999 based on 1994 as the reference year. That inventory covered the Energy; Industrial Processes; Agriculture; Land Use, Land Use Change and Forestry (LULUCF); and Waste sectors. The high proportion of natural vegetation cover of the country gave it the capacity to absorb more Carbon Dioxide than it emitted, but Belize was determined to be a net emitter of greenhouse gases due to the quantity of methane emissions and the Global Warming Potential (GWP) attributed to that greenhouse gas. The inventory revealed that the highest quantity of GHG emitted was CO₂. The major source of methane emissions identified in that first GHG inventory was the Waste sector, although the Agriculture, and Land Use Change and Forestry Sectors were also sources of this gas.

The results of the first GHG inventory, summarized in Table 1 below, suggested that Belize was a net sink for greenhouse gases when the volumes were analyzed by *Sector* emissions.

Table 1: GHG Emissions by Sector in 1994

Sector emissions	Gigagrams (mass)	Percentage of total
Energy	617.528	21
Industrial processes	1.735	<0.1
Agriculture	58.807	2
Land-use change and forestry	2056.365	68
Waste	259.66	9

However, further analysis of the Emissions by *Gases* revealed that Belize did emit more greenhouse gases than its forests absorbed because of the quantities of methane produced, compounded by the Global Warming Potential of this gas. This is summarized in table 2 below.

Table 2: Emissions by Gases in 1994

Greenhouse Gases	Gigagrams	Percentage of Total	GWP factor	CO ₂ equivalent
Carbon dioxide	2589.668	86.493	1.0	2589.668
Methane	271.512	9.051	24.5	6652.044
Carbon monoxide	122.472	4.090	n/a	n/a
Nitrogen oxides	5.597	0.187	n/a	n/a
NM VOC	3.720	0.124	n/a	n/a
Nitrous oxide	0.596	0.020	320.0	190.72
Sulphur dioxide	0.500	0.017	n/a	n/a

Estimates of the quantities and characteristics of the other sources of emissions were also reported in the FNC.

2.3 Vulnerability Assessments

Vulnerability studies were conducted within the agriculture sector, on three of the basic food crops, corn, red kidney beans and rice. This was conducted in 1995 under the United States Country Studies Programme. A crop simulation model “Decision Support System for Agro-technology Transfer (DSSAT3) was used to create scenarios of a 1 to 2 degree Celsius increase in temperatures with 20 % increase or reduction in precipitation in order to measure the impact on the yield of the three selected crops. The model projected a reduction of yield between 14 % to 19 % for beans, 10 % to 14 % reduction for rice, and 17 % to 22 % reduction for maize. The higher temperatures increased the growing period for the crops which lowered their yield. The changes in precipitation did not affect the growing season, but reduced the yield of all three crops. This study did not incorporate the effects of carbon dioxide fertilization on yield, which would offset some losses.

A number of vulnerability studies were conducted under the United States Country Studies Programme. One was an initial assessment of Belize’s coastline to sea-level rise that was conducted in 1994 by the Belize Center for Environmental Studies. An aerial videotape-assisted

vulnerability assessment was conducted based on distribution of populations, the level of infrastructural development, and the economic importance of these areas (within the coastal zone). Another was the vulnerability assessment of the Belize River Basin conducted by the National Meteorological Service. This choice was based on the availability of hydrological data, it is the largest basin in the country serving as the source of water to about 50 % of the population, it encompasses the most fertile agricultural lands, and the extent of economic activity occurring within the basin. Economic activity included citrus cultivation, rice and fruit cultivation, vegetables, tourism and livestock rearing. This assessment analyzed runoff created through the modeling of different scenarios of precipitation and temperatures.

2.4 Mitigation and Adaptation Measures

A study was conducted to prepare for Mitigation and Adaptation to Climate Change in certain development sectors. The report on National Climate Change Adaptation Issues in Belize highlights several areas requiring attention. Issues included the impact on biological diversity, changes to the hydrological cycle, increased energy consumption, the impact on the aquaculture industry that has developed almost entirely within the coastal zone, major impact on the entire coastal zone itself, and on water resources. The report further prioritized the issues, then recommended some mitigation and adaptation options for each of the sectors addressed in the exercise.

In 2003, the Government of Belize Policy on Adaptation to Global Climate Change was drafted with the support of the CPACC project. The draft policy gave the mandate to the relevant government agencies to “prepare adaptation policy options for their sectors”. It established a framework for action within the agriculture, coastal zone, education, energy, environment, fisheries, forestry, health, housing, information, tourism, transportation, and the water resources sectors. Provisions were made for Planning and Management Mechanisms, and Accountability. This policy has not been submitted to and approved by Cabinet, but some of the activities have been initiated. Examples are the Inventory of Coastal Zone Resources described in the periodic State of the Coastal Zone reports; the Energy Sector Diagnostic report prepared by the Public Utilities Commission; monitoring of the nation’s reefs and fisheries habitats by the Fisheries Department; Assessment of Belize’s Forest to Mitigate the impacts of climate change; and appointment of the Pro Tem Water Commission to address water resources issues in Belize.

The Formulation of a National Energy Plan derived from the Sector Diagnostic & Policy Recommendation Project is another step in the process of integrating renewable energy utilization for sustainable development of the country. This trend is a positive move in the area of mitigation of climate change.

Other Mitigation and Adaptation measures that have been initiated include:

- The Forest Department’s promotion of sustainable forest management;
- Increased cooperation and collaboration in conservation through government/non-government partnerships, and enhancement of GHG sinks through government’s establishment of terrestrial and marine protected areas;

- Formulation and implementation of the National Hazard Mitigation Policy drafted by the National Emergency Management Organization.
- Private sector involvement in projects under the United States Activities Implemented Jointly Programme (USAIJ) such as Programme for Belize's participation in the Carbon Sequestration project;

Potential Clean Development Mechanism Projects

In 2001, Pine Lumber Company, a private sector timber harvesting and manufacturing company, initiated a Pre-feasibility study on energy generation using sawmill waste. The study evaluated the potential and feasibility of generating heat from biomass fuel for lumber drying and electricity generation for operation of the sawmill facilities. The results indicated that there was need for further study.

Belize participated in the *Central American Regional Project on Forests and Climate Change* that was reported on in 2002. This project, funded by the Netherlands, sought to assess and strengthen the capacity of the forest sector to participate in Clean Development Mechanism (CDM) projects. The report concluded that there were some (land) areas that fit the criteria for this flexible mechanism that could function as improved carbon sinks through the application of certain forest management techniques. Another related regional project, in which Belize participated, is the Meso-American Biological Corridors Project which has potential for individual land owners, communities, and members of the business sector to benefit from projects under the CDM.

Marine/Coastal Zone Climate Change Projects

The *Caribbean Planning for Adaptation to Climate Change (CPACC) Project, April 1997 to December 2001*. The objectives of the CPACC project included capacity building within the SIDS in the areas of monitoring and analyzing climate change and sea-level dynamics; institutional strengthening and human resource development; identification of areas particularly vulnerable to the phenomena; development of integrated management and planning for the coastal and marine areas; and identification of policy options and measures to initiate long term climate change adaptation programmes. This project was implemented at the regional level, with Belize, Jamaica, and the Bahamas participating in the pilot phase of the Coral-reef monitoring component. The Fisheries Department collaborated in the implementation of the CPACC project. The CPACC was followed by the Adaptation to Climate Change in the Caribbean (ACCC) project, then the project to Mainstream Adaptation to Climate Change (MACC) which is currently being implemented through the CARICOM Climate Change Centre located in Belize.

2.5 Constraints and Gaps.

The following gaps in the implementation of certain Articles of the Convention were also identified:-

Article 4.1(e): The development of integrated coastal zone management plans have been initiated, and a draft Water Resources Act has been formulated, but similar efforts for agriculture, and for the protection and rehabilitation of areas affected by drought and floods had not been addressed by 1994. The NMS will continue to participate in the existing committees that are engaged in the process of completing these initiatives.

Article 6.a (i): Implementation of a national public education and outreach programme for climate change had not been initiated. A climate change survey was completed in July as one of the steps in preparing for a national Public Education and Outreach (PEO) programme. The findings of that survey will be integrated along with those of the other participating CARICOM countries into the regional PEO programme that the MACC project will implement. The initial survey, described as a Knowledge, Attitude, and Practice (Behavior) KAP survey, is designed to extract data and information about the respondents knowledge, their attitude to, and behavior based on knowledge, about the issue being addressed. In this case the issue was climate change. It is expected that the country surveys will be completed by the end of 2005, after which the PEO programme could be formulated, and implemented during the same period as the implementation of the SNC projects.

Articles 7.6; 9.1; 10.1: Belize's participation in international events such as the Conferences of the Parties, and intercessional meetings of the Subsidiary Bodies has been constrained by the limited allocations which made provisions for only one person. GOB had not made any financial provisions in support of such participation.

Article 12.4: While Belize had not independently proposed any national projects seeking additional financing, to access specific technologies, materials, equipment or practices that would be needed to implement climate change projects, it had participated in a number of regional projects including Caribbean Planning for Adaptation to Climate Change (CPACC), Adaptation to Climate Change in the Caribbean (ACCC), and Mainstreaming Adaptation to Climate Change (MACC).

Certain areas or sectors were not addressed in the FNC. During the period reported for the first GHG inventory, Belize did not have any major industrial activity utilizing solvents, so this sector was not addressed in the FNC. Vulnerability and adaptation assessments had been limited to the agriculture sector only, primarily because of availability of data and other information. Other important sectors such as health, tourism, and water resources were not addressed. The most obvious constraint experienced and reported by all the consultants was the incompleteness of data that was available. For example, statistical data about areas of forest converted to other use or burnt was unavailable since it was not recorded even though the incidents of land clearing or number of wild-fires were mentioned in reports. There were other cases where data was incomplete because details of activities were recorded for parts of the country while the same activity was not reported for other areas. Initial studies to determine mitigation and adaptation options in certain sectors were initiated, so the SNC may offer opportunities to expand on these.

The SNC may also be the means of identifying new or emerging issues and creating synergy with the other Conventions under the framework of a National Action Programme.

2.6 Other information relevant to the achievement of the Convention Objectives

Systems for Climate Observations.

The National Meteorological Service has accumulated well over forty years of climate data that is retained in their files. This provides an opportunity for the development of early warning systems for drought. Monitoring of climate data, utilizing automated and manual systems, occurs all year round at a number of locations throughout the country. The NMS provides daily weather reports for radio broadcast, three-day forecasts for television, and five-day forecasts that are disseminated by national newspapers. The NMS collaborates with regional and international institutions to analyze climate data for forecasting for aviation, local travel, agricultural planning, physical planning, and for improvement of safety margins before natural disasters.

Systematic Observation and Research

Improved collection, management, analysis of data, and dissemination of information will increase the awareness and understanding of the climate change phenomenon. This deficiency in Belize can be improved by:

- Reducing the information gaps through research and continuous systematic observations. Availability and dissemination of reliable information would empower a wider cross-section of the population to participate in climate change activities, and enable them to contribute to the formulation of climate change projects seeking external assistance.
- The establishment of a (modified) National System to institutionalize the sustained management of greenhouse gas inventories.

2.7 Priorities/New areas of work.

The stakeholder consultation conducted as part of the preparatory process identified some new areas where activities should be initiated. Recommendations included studies in the following areas of interest:

Table 3 is a summary of proposed and prioritized activities for the SNC.

Priority Suggested	Stakeholders (Potential and/or already involved)	Proposed Project /Programme/Activity	Impact (Mitigation, Adaptation, or other)
1	LIC, CZMAI	Mapping in `greater detail utilizing smaller contours (coastal zone mapping) required for vulnerability projections of sea-level rise, planning, etc.	Planning
1	GALEN UNIVERSITY	Comprehensive study of the economic impacts of CC that would affect all the economic sectors. Health, Agriculture,	Planning

		Forestry, Fisheries, and Tourism Sectors prioritized.	
3	Related to the UNCBD	Ecological impact affecting sectors of the economy. Climate change will have impact on bio- diversity (secondary to above)	Research & Analysis for Mitigation & Adaptation
1	MOH, NEMO	Impact of CC on Health/Environmental Health issues. Vulnerability study of coastal health facilities movement necessary	Mitigation & Adaptation
1	BTB	Tourism sector - national carrying capacity [infrastructural]	Mitigation
1	NMS MACC	MACC pilot vulnerability study for tourism (three to six month project)	Adaptation
1	FD, LSD, CZMAI	Impact of forest fire on forest/vegetation cover, Land conversion	Research: biomass & carbon storage
1	NFP, GHG Inventory Consultants	Residential energy usage – biomass / firewood use	Inventory data
2 1	GHG Inventory Consultants	Waste-water sewage treatment pollution associated with flooding, GHG emissions from solid waste disposal facilities and technologies being utilized in Belize. Emissions associated with transport industry and the agricultural sectors.	Research for emissions
1	MOA	Agricultural / aquaculture sector vulnerability - indirect effect by pest, drought, and impacts of salt water intrusion into aquifers, etc..	Impact on Food security and economy
2	MOA	Vulnerability study: rice under irrigation impact on reduction in forest cover, shrimp waste emissions	
3	NMS	Mapping storage capacities and recharge potential in aquifers.	Water resources research necessary to determine vulnerability
2	(CDM), PUC	Use of waste for energy generation and reduction of GHG emissions	Mitigation & Adaptation
1	NMS, FD, Agric Dept.,	Watershed management (downstream effects on coral reef impacts)	Research for Mitigation measures

Notes to the table:

- 1) A simple priority rating was established for choice on the proposed activities:
 - 1 – high priority
 - 2 – medium priority
 - 3 – low priority

Assignment of priority of the proposed project/activity was based on the following criteria:

- Development sector (of the economy) that would be affected; eg. Agriculture & food security.
- Immediate use in the GHG inventory
- Feasibility of completing them as part of the SNC exercise or based on the available resources.
- Potential for further development into projects/programmes requiring collaboration between stakeholders and/or inputs of other resources.

The column headed **Stakeholders** indicate those institutions or agencies who should be involved in the activity or are already involved.

The fourth column labeled **Impact** attempted to place the proposed activities within the themes of research, mitigation or adaptation measures. This grouping would need further analysis by a smaller technical group.

2.8 Lessons Learnt

The Stock-take exercise yielded other results. Inclusive is a clear understanding of where capacities (to implement the convention) had been gained by individuals and institutions. While the assessment revealed that capacity has been gained overall at the national level, this capacity is mostly concentrated in one or very few individuals. Strategies need to be implemented to ensure that similar and complementary skills are developed by other persons in other institutions that should be involved in climate change projects and activities.

The low level of dissemination of climate change data and information has been a major constraint to fostering national cross-sectoral participation in the development of policies and strategies to address the climate change issues facing Belize. The main reason is the failure to promulgate a national public education and outreach programme for climate change.

The self-assessment exercise suggests that the low level of dissemination of information about climate change and its potential impacts on the development of the country contributed to the failure to institutionalize climate change management strategies into national planning documents. The vulnerabilities and threats posed by the effects of climate change, such as coastal erosion and salt water intrusion into coastal underground water supplies are not fully grasped. Stakeholders are therefore not driving the process to bring changes to the development activities like coastal settlements or forest conversion to other uses. Similarly a national climate change adaptation policy had been formulated, but the process of adopting it has not been completed.

The state of data and information available for the 1994 GHG inventory was a constraint experienced by the consultants at that time. Data was not always in useable format, was often

incomplete (gaps in the data), and units of measurement differed between the agencies concerned. It has already been noted that some individual capacity to deal with climate change has been developed in Belize, but this is less evident at the institutional and systemic levels. The SNC will enable a broader group to gain experience and exposure through wider dissemination of information and involvement in the national and technical consultation sessions that will be conducted during the project.

There is a need for promotion and cooperation in the application and transfer of technology to control, reduce or prevent emissions through investments and research projects in renewable energy from sources such as biomass, hydro, solar and wind.

Appendix B: Technical Components of the Project Proposal

1. Background/Context

Belize became a Party to the UNFCCC in 1992, having the status of a non-Annex 1 country. Belize also joined the Kyoto Protocol in 2003, with the status of Annex B.

Belize is a coastal country with a vulnerable environment located in the western Caribbean. It is vulnerable to global climate change.

The Belize energy sector is faced with serious challenges, but government in partnership with the industrial sector has initiated policy and action to address the needs. Demand has increased significantly since 1990, and supply has not been able to grow apace.

The United States Agency for International Development (USAID) through the Environmental Protection Agency (EPA) is currently supporting a regional project to develop capacity and to standardize the methodology to prepare GHG inventories. The project will build on the expertise gained during the preparation of First National Communications. By strengthening national capacity to prepare inventories and establishing a trained, sustainable inventory team, the project will help these countries to reduce uncertainties and improve the quality of inventories for subsequent National Communications. This, in turn, will allow countries to improve national strategies for reducing greenhouse gas emissions.

Since the period of the first GHG and National Communication Belize has experienced growth in certain social and economic sectors, this growth imposing impacts on the environment that need to be assessed.

The GEF funded National Capacity Self-Assessment Project helped the key stakeholders to identify their strengths and weaknesses affecting the implementation of the convention. The report that was produced also described where capacities had been gained and where it was lacking at the systemic, institutional, and individual levels. The national consultations assisted the stakeholders to prioritize those activities that should be carried out to continue to meet the other requirements, and to further the implementation of the Convention. Certain strategies and activities were recommended for implementation in order to address the gaps and constraints.

In Belize, it is the Ministry of Natural Resources, Local Government, and the Environment that is responsible for the implementation of three Environmental Agreements, the UNCBD, UNCCD, and the UNFCCC. The responsibility is shared between two of the departments within this ministry; Forest Department for the UNCBD, and the National Meteorological Service for the other two. The Forest Department had been responsible for the UNCCD up to May of 2005. Following the NCSA, the ministry is in a more informed position with additional information on available capacities, strengths, weaknesses, gaps, and constraints that should enable the formulation of strategies to maximize the benefits that could be derived from involvement in and implementation of the Conventions. Opportunities exist for reallocation of available resources or creation of more effective partnerships among the stakeholders, thereby contributing to the achievement of Synergy. Such opportunities have been presented for partnerships between government agencies, between non-government organizations, private/business companies, and between combinations of the stakeholders across the sectors.

2. Project Development and Main Objectives

The medium and long-term objective of this project is to strengthen Belize's technical and institutional capacity to assist the mainstreaming of Climate Change activities into sectoral and national developmental planning priorities. This should enable the country to deal with climate change as an environmental issue having impacts on sustainable development.

The project will provide managers and other stakeholders with better information about the sources of GHGs, how the impacts of climate change will affect sustainable development of the country, what potentials exist for opportunities to abate the emissions, and some priorities for the introduction of adaptation measures. The inclusion of the Technology Needs Assessment (TNA) as a key component of the SNC will provide Belize with information necessary to garner the assistance of developed nations in the acquiring and use of technology needed to respond to the needs of GHG mitigation as well as to forward national efforts as they relate to climate change adaptation. Another important result of this project will be the increased awareness of climate change and its impact on Belize that will be achieved by the wider participation of stakeholders in the project.

The immediate objective of this project is to meet the Convention requirements by enabling Belize to prepare and submit its Second National Communication to the UNFCCC.

3. Project Strategy

The goal of this project is to prepare Belize's Second National Communication by building on previous work carried out under the First National Communication, National Capacity Self-Assessment, the United States Agency for International Development/Central American Council on Environment and Development/Environmental Protection Agency regional project on GHG inventories and other climate change related activities which established guidelines and methodologies for the development of the project. The priority areas and issues identified through stakeholder consultation workshops under the stocktaking and thematic assessment exercises will provide focus for the proposed activities. *Synergies* with other environmental programmes and ongoing activities such as the UNCBD and UNCCD action plans will be attempted. Certain outputs of other projects such as the USAID/CCAD/EPA GHG Inventory standardization project, NCSA recommendations will be utilized for the SNC exercise. It is expected that the data and information reported in the Second National Communication will be of greater reliability and detail, and country sourced than those available for the First National Communication.

During the second GHG inventory and preparation of the SNC, the project will involve consultants from the previous exercise, and other consultants who have participated in the preparatory activities. A roster of interested and qualified consultants was developed as part of the preparations under the enabling activities. The new and successful applicants will be trained by the more experienced consultants, with assistance accessed through the CCCCC or the UNFCCC Secretariat if necessary. This strategy will enhance the sustainability of the teams and the process of preparation of national communications.

There will be periodic public consultation workshops during which the draft reports of the GHG Inventory consultants and those of the Vulnerability and Mitigation Assessments will be presented for review. Stakeholders will be given opportunity to participate throughout the duration of the exercise. Consultants will hold technical meetings among themselves and with the Project Steering Committee in order to share information and experiences. The National Focal Points of the three major environmental Conventions are expected to participate in all these sessions, as well as other representatives of their institutions.

The technical work of the SNC will utilize the established IPCC methodologies. Belize will also be able to apply the lessons learnt from the United States Agency for International Development Environmental Protection Agency GHG Inventory Standardization project for the upcoming GHG inventory. This project provided training in the use of inventory software, and developed methodologies that may help to improve the quality of the data derived from the inventory. It is expected that improved national data from some sources of emissions, eg. for different forest types, will be derived and incorporated into the estimates.

In response to Belize's needs to address mitigation and adaptation, the country will engage in key investigative and consultative activities all aimed at conducting a National Technology Needs Assessment. The TNA process is expected to identify technology gap and needs in its efforts to respond to mitigation and adaptation initiatives. The TNA will contribute to the development of a comprehensive national strategy for dealing with climate change by providing an integrated framework for technology transfer in support of sustainable development.

4. Project Activities

4.1. National Circumstances

The National Circumstances of Belize presented in the First National Communication will be updated. All aspects of the national circumstances will be addressed. It is expected that treatment of the geographic and geologic elements will require minor revisions, while the socio-economic aspects of this section of the report will require some update to reflect the changes that have transpired between the first and second reporting periods.

Output 4.1.1 National Circumstances reviewed and updated.

Activities

- Validate the gaps of information identified under stocktaking exercise and the recently completed exercise under the National Capacity Self-Assessment project.
- Identify the respective sources of information.
- Collect data and verify information
- Fill the gaps, and add the new information
- Draft the National Circumstances section.

The preparation of this section of the SNC will be the responsibility of the NFP in collaboration with the Project Manager.

4.2 National Greenhouse Gases Inventory

Belize's first GHG inventory covered five sectors, excluding that of Industrial Solvents since Belize did not have much industrial activity at that time. Key sources were not estimated. Estimates of emissions were determined for the base year 1994. No time series were analyzed. The emission factors utilized were the default factors provided by IPCC 1996 Revised Guidelines. The major constraints experienced were due to activity data gaps, which contributed to the degree of uncertainty of the estimates (%). Data gaps were related to the data availability for parts of the country and inconsistency (certain periods missing).

The second national greenhouse gases inventory should benefit from the technical assistance provided under the USAID/EPA/CCAD GHG Inventory Standardization Project that has been underway in the Central American countries since late 2003. The main objective of this project is to improve the quality of GHG inventory by training the experts/consultants in the use of software, and refining the software used to estimate the emissions.

The second national GHG inventory will also capture new sources and sinks that might have arisen as a result of development activities within the sectors. A key source analysis will be completed and the results included in this report. As decided at the Conference of the Parties held in Milan, Italy in 2004, emissions for the second national GHG inventory shall be estimated for the base year 2000.

Local Consultants will be contracted to conduct the sector inventories as prescribed by the IPCC. A roster of Consultants who participated in the first exercise has been developed. The list includes other consultants who are or will be able to provide services for the second GHG inventory.

Output 4.2.1: Establishment of procedures to validate and improve national data for land-use, land use change and forestry (LULUCF) at the national level.

The SNC project will develop procedures, in coordination with various appropriate institutions, to improve activity data for LULUCF, given that this sector is the most important source of emissions in Belize. This will include the validation of data on the biomass values of the various (predominant) forest types or classes in Belize and deforestation rates by forest types. Data improvement will focus on reserve areas where the forest types are represented, in order to obtain national biomass values that should improve the quality of the estimates of emissions and sinks. This data improvement process will be accomplished through partnership between the Forest Department, University of Belize, Programme for Belize, and the University of the West Indies, and the CARICOM Climate Change Centre.

Activities

- Representatives of Programme for Belize, University of the West Indies, University of Belize, CARICOM Climate Change Centre, and Forest Department meet to finalize selection of forest types for the collection of data under the project.
- Definition of approaches to be adopted for data improvement
- Identification of forest categories that would be representative of forest cover at the national level.
- Literature revision of comparable forest research in other countries
- Validation of data through field assessments
- Retrieval of national biomass factors and deforestation rates for use in the Inventory.

Output 4.2.2: The GHG inventory team assembled and equipped.

A team comprising experienced consultants will be assembled to conduct the second national greenhouse gases inventory of emissions and sinks. Those consultants who will participate for the first time will benefit from the experience of the others. The technical assistance provided in training and software development under the USAID/EPA/CCAD project will improve the output of the team.

Activities:

- Identification and mobilization of national consultants for the sectors.
- Revision the existing data and information on the first GHG inventory.
- Identification of gaps and collection of additional data with the aim of filling flagged data gaps.
- Use of software and other IPCC tools by inventory consultants.

Output 4.2.3: Methodologies for GHG inventory estimates analyzed, selected and validated.

Activities:

- Introduction of the Tier level based on the decision trees as guided by IPCC Good Practices Guidance.
- Decide on the source categories to which surveys for filling data gaps will be carried out.

Output 4.2.4: Collect GHG inventory data and complete the IPCC workbooks.

Activities:

- Sourcing and collation of new activity data for estimates of GHG emissions for 2000.
- Incorporation of generated data collected from the Biomass generated under the validation process
- Utilization of the standardized protocols developed by the IPCC in the:
 - Development of data sets not existing for the year 2000 but considered as priority. These data sets includes, but are not limited to,: biomass values of different forest classes, enteric fermentation, fuel consumption from mobile sources, fuel combustion in industry, fuel wood collection in rural areas, solid wastes.
- Based on emission factors to be considered in GHG Inventory, new and continuing data gaps identified.
- Conduct exercises in the estimation of GHG emissions inventory for 2000 (Values to be utilized in the preparation of national draft inventory of anthropogenic greenhouse gas emissions by sources and removals by sinks for 2000).
- Conduct key sources analysis for 1996 and 2000 allowing for examination of trends.
- Undertake uncertainty assessment as guided by Good Practices Guidance manual of the IPCC.
- Revision the inventory for internal review as part of QA/QC plan.
- Presentation and validation of findings through organized national workshops
- Finalization of inventory for use and submission in the SNC.

Output 4.2.5: GHG inventory data and estimates documented and archived

Activities:

- On the basis of the above validation, develop a national inventory management system to facilitate the updating of GHG inventories in the future and sustainability of the inventory process.

The Consultants will produce individual reports that will be attached as annexes to the SNC. The Project Manager, in collaboration with the National Focal Point, will produce a synopsis of

these reports including summaries on the emissions and sinks of Belize's greenhouse gases. This will form one section of the Second National Communication.

4.3 Programmes for Vulnerability Assessments and Adaptation Measures for climate change

The first assessment of Belize's vulnerability to climate change was probably that study conducted to determine the vulnerability of the coastline to sea-level rise done by the Belize Centre for Environmental Studies (BCES) in 1994. This area had been prioritized because of its low-lying state, the concentrations of populations in this zone, the level of infrastructural development, and the range economic activities occurring there.

GPS references had been used to locate certain physiographic and socio-economic features in order to enable continuous monitoring. A major recommendation of the study was to conduct topographic surveys of the Coastal Plain to determine areas vulnerable to inundation from sea-level rise in order to prepare planning responses. Another was for annual monitoring of the coastline. Both of these remain priority needs.

Consultants working in this phase of the project will be expected to review similar activities that are underway or have been completed in the region in order to determine whether the technology can be applied to the Belize situation. The opportunity to share experiences and lessons will be exploited.

Output 4.3.1: Vulnerability and Adaptation Assessment of Water Resources.

This consultancy will determine the vulnerability of coastal water resources to changes in the hydrological cycle and rising sea levels. The drought experienced earlier this year revealed instances where the coastal wells were showing signs of salt water intrusion, national measurements also indicated an advancing of the salt water wedge up certain river systems, reaching at one point the area from which water is extracted to meet the needs of Belize's largest urban setting. Two sites will be selected representing a coastal aquifer and an inland catchment area. To the extent possible, analyses will be undertaken of climatological records to determine any changes that may have been observed. Models outputs will be used to select the most likely future climate scenarios. These scenarios will be used to objectively determine the potential future surface and subsurface water characteristics. To the extent possible, suitable computer software will be used in these studies. This work will be undertaken by consultants under the supervision of the National Pro-Tem Water Commission and more specifically the Hydrological Section of the national Meteorological Service.

Activities:

- Contract Consultants to determine the vulnerability of the fresh-water supply systems, and provide them with the Terms of Reference.
- Provide Consultants with supporting materials; documents etc.

- Review Consultants report for analysis of results.
- Submit results to Managers and Policy Makers, and disseminate via all media.
- Draft follow-up plan of action with recommendations.
- Document and Archive the new report.

Output 4.3.2 Revised Vulnerability Assessment of the Coastline.

In 1995 under the US Country Studies Programme, a vulnerability assessment was conducted on the coastal zone of mainland Belize. The IPCC Aerial Videotape assisted Vulnerability Analysis (AVVR) methodology was utilized to map the coastline and an assessment was carried out identifying those areas most likely to be affected by sea level rise. It is proposed that the process be repeated under this SNC initiative in an effort to update sea level rise projections and that its scope of the intervention be extended to include Belize's offshore islands. This effort is to be undertaken under the direct supervision of the CCMAI.

Activities:

- Contract Consultants to conduct the follow-up (to the 1994 BCES Study) project and provide Terms of Reference.
- Provide Consultants with supporting materials; documents etc.
- Review Consultants report for analysis of results.
- Submit results to Managers and Policy Makers, and disseminate via all media.
- Draft follow-up plan of action with recommendations.
- Document and Archive the new report.

Output 4.3.3: Vulnerability and Adaptation Assessments in the Agriculture Sector.

Belize's economic growth and food security is highly dependent on Agricultural activity. There is moderate diversification in cultivation of crops, and food security may be at risk from the impending impacts of climate change. In 1995 under the US Country Studies Programme vulnerability studies were conducted on the agriculture, particularly on the staple crops grown in Belize, rice, beans and corn. The DSSAT model was used to undertake the study. Through the support of this SNC intervention Belize will expand the scope of this study to include those other commercially important crops inclusive of papaya, sugar cane, and vegetables.

Activities:

- Contract Consultants to conduct vulnerability studies on commodities such as sugarcane, bananas, rice, and citrus; Terms of Reference will be provided to the Consultants.
- Procure models and provide Consultant with supporting materials; models, documents, etc.
- Consultants obtain data and information from individual sources and process the data using appropriate models.
- Consultants draft reports describing findings based on scenarios.
- Document and Archive the reports.
- Chapter on Vulnerability Assessments in the Agricultural Sector is completed.

Output 4.3.4: Vulnerability and Adaptation Assessment of the Health Sector

The Risks to human life and well-being resulting from climate change need to be determined. The Public Health Bureau has indicated an interest in assessing the impact on vector borne diseases or pests due to changed environmental conditions. Regional institutions have already initiated studies on the impact of climate on dengue in the Caribbean region including Belize. It is proposed to build on its work and project the effect of future climate scenarios on the incidences of dengue in Belize.

Activities:

- Contract Consultant to conduct the sector study and provide Terms of Reference.
- Provide Consultant with supporting materials; models, documents, etc., then obtains data and information from appropriate sources.
- Consultant analyzes data, drafts report describing findings, conclusions, and recommendations.
- Document and Archive the report.
- Chapter on Vulnerability Assessment of the Health Sector is completed.

Output 4.3.5: Vulnerability and Adaptation Assessment of the Fisheries and Aquaculture Industries

This segment of the agriculture sector is also important to the continued economic growth of the country. A growing proportion of the population is engaged in such activities, so the threats to

the marine and coastal zone within which the industry is concentrated needs to be assessed in order to determine what adaptation measures could be installed. No assessments of the effect of climate change have yet been undertaken. The assessment will focus on both capture fisheries and the aquaculture industry. A literature review will be undertaken to determine the most appropriate methodology to undertake the assessment. The assessment will be undertaken by consultants under the direct supervision of the Fisheries Department.

Activities:

- Contract Consultant to conduct the sector study focusing on the catch-fishing and aquaculture industries, and provide Terms of Reference.
- Provide Consultant with supporting materials: documents, etc., after which the Consultant obtains data and relevant information from both the private and public sector representatives of the tourism sector.
- Consultant analyzes data and information, and drafts a report describing conclusions about on the vulnerability of the sector.
- Consultant offer recommendations for Adaptation Options to ensure sustainability of the sector.
- Document and Archive the reports.
- Additional Chapters on Vulnerability Assessments within the Agricultural Sector is completed and ready for inclusion in the SNC.

Another sector of profound importance to Belize's national economy is the tourism sector. Climate change is expected to affect both the attractions of the country and the infrastructure required to service the growing industry. Vulnerability assessments on this sector are expected to be conducted parallel to SNC activities through the regional MACC project.

Output 4.3.6.: Section on Vulnerability and Adaptation for the SNC completed

Activities

- Develop the section on the Vulnerability and Adaptation using the various sector reports.
- Circulate the draft chapter of V&A for review and comments. .
- Organize a national workshop to discuss findings of the V&A studies and obtain input from stakeholders.
- Finalize the Vulnerability and Adaptation chapter for inclusion in the SNC.

- Archive and document all the Vulnerability and Adaptation related studies and estimates.

The Vulnerability and Adaptation Assessments in the agriculture sector will expand on what was completed for the FNC, while those for Health and Fisheries have been identified as new priority areas.

4.4 Programmes containing measure to Abate (Mitigate) climate change.

In 1994, Belize was almost entirely dependent on the importation and combustion of fossil fuels for energy generation. That situation changed during the latter half of that decade. Decisions had been made and work was underway on the construction of a hydro-dam system designed to generate a portion of the national electrical needs. Electrical energy generation was projected for a maximum of 27 megawatts under optimum conditions of water supply from the Mollejon facility that was the first phase of the project. This represented approximately 50 percent of electrical energy needs at that time.

As no mitigation studies were undertaken on the potential options to reduce omissions due to energy generation, the second greenhouse gas inventory will provide relevant data needed to calculate the impact of the introduction of renewable energy sources on national emissions. To the extent possible further studies will be conducted to calculate the greenhouse gas emissions that were averted by the introduction of hydropower in the national grid in 1995 and the expansion of its capacity in 2005 with the introduction of a reservoir and additional generating capacity. Projections will also be made assessing the potential impacts of proposed additional hydrogeneration facilities and a proposed cogeneration facility.

Output 4.4.1. Analysis of the abatements impacts of Hydro-electric power generation

Activities:

- Contract Consultants and provide Terms of reference.
- Consultants obtain data and information on the amount of electrical energy supplied by the facility during the research period.
- Estimate the emissions (saved) from fossil fuels for the same quantity of electrical energy.
- Report on the reduction of emissions as a result of the change in production of electrical energy.

Output 4.4.2. Analysis of the potential impact of Co-generation (Biomass) generation of electrical energy

This study will determine the beneficial effect of using biomass fuel to generate electrical energy as a replacement for diesel fuel generation. It will examine the Belize Sugar Industries/Belize

Electricity Limited project that will utilize industrial waste from the sugar factory to produce a significant proportion of Belize's electrical energy needs.

Activities:

- Contract Consultants and provide them with terms of reference.
- Consultants meet with Belize Sugar Industries and Belize Electricity Limited Personnel to obtain accurate data and information about the Co-generation project.
- Estimate the quantity of the emissions if the amount of electrical energy expected to be produced from this source if the same amount was produced from combustion of fossil fuel.
- Report the results obtained.

Output 4.4.3. Derive an initial estimate for the emissions of greenhouse gases from the treatment of sewage waste in the City of Belmopan, and waste-water treatment at the Bowen and Bowen – Ladyville plant.

This will be the first effort to estimate emissions of greenhouse gases in Belize from such facilities. This is part of the effort to improve the reporting on the emissions.

Activities:

- Contract Consultant and provide Terms of Reference..
- Provide Consultant with supporting materials: documents, etc.
- Consultant obtains data and relevant information, and utilizes data to estimate emissions of GHGs from this source.
- Consultant drafts report describing results of the study.
- Document and Archive the reports.
- Section report ready for the SNC.

Output 4.4.4. Determine the reduction of greenhouse gas emissions to be derived from Proper Solid Waste Treatment for three major sources of solid waste (Belize City, Belmopan, and San Ignacio)

The Solid Waste Management Authority has been activated and plans are underway to begin construction of a properly designed solid waste treatment facility. This phase of the project is to serve the communities of Belize City, the City of Belmopan, and the western towns of San

Ignacio, Santa Elena, and Benque Viejo. This study will examine the abatement impact of this system compared to the existing situation of garbage dumps.

Activities:

- Contract Consultant and provide Terms of Reference..
- Provide Consultant with supporting materials: documents, etc.
- Consultant obtains data and relevant information, and estimates emissions of GHGs from existing sources
- Consultant estimates emissions from the new treatment.
- Consultant analyzes impact of the application of proper waste treatment.
- Document and Archive the reports.
- Section report is presented for inclusion in the SNC.

The energy and waste sectors had been major sources of emissions for the first reporting period. Since then some important changes have occurred in Belize. Belize has reduced its electrical power generation from diesel fuel by constructing and commissioning hydro-electric systems. The solid and liquid waste sectors have also seen some developments, so the positive impacts of these changes will be assessed through the four above-listed projects.

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

This section will be used to update information reported in the FNC. The information will be validated to determine if it is still relevant, or improved where necessary. This will be done by the Project Manager in collaboration with the National Focal Point.

Output 4.5.1. Additional information relevant to the achievement of objective of the UNFCCC compiled and synthesized

Activities:

- Collect, synthesize and report additional information relevant to Article 6 activities.
- Collect, synthesize and provide information on how Belize is addressing activities related to the transfer of and access to environmentally sound technologies and traditional knowledge.

- Collect, synthesize and provide information on new or ongoing research and systematic observation systems.
- Collect, synthesize and provide information on ongoing programs and projects relevant to climate change.
- *Summarize all the information* and prepare for technical review.
- Prepare the revised draft for inclusion in the SNC.

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

One of the objectives of this project is to mainstream climate change matters into national development planning. Special emphasis on sharing information with managers and other stakeholders will be made during the period of implementation of the SNC. Those constraints and gaps affecting implementation of the Convention that were identified in the First National Communication and the National Capacity Self-Assessment project will be reviewed to determine if they are still relevant, if they were addressed, or if they could be addressed through this component of the SNC.

Output 4.6.1. Gaps and Outputs in implementation of the Convention assessed and reported in the Second National Communication.

Activities

- The Project Manager will review of the status of the Constraints and Gaps reported in the UNFCCC NCSA Thematic Assessment.
- The Project Manager will facilitate public consultations to undertake this assessment.
- The status of earlier constraints and gaps will be reviewed and updated, while new constraints and gaps (technical, institutional, methodological, financial, capacity), related to the thematic areas (inventory, abatement analysis, V&A) will be discussed and recommendations made to rectify them.
- Summarize the constraints, gaps and needs identified and prepare a draft report for review and consultation.
- Finalize the report after consultation input and prepare for use in the SNC.

This section of the SNC will be completed by the Project Manager in collaboration with the NFP, with input from the consultants.

Output 4.7: Second National Communication prepared, submitted to Cabinet for approval and submitted to the Secretariat of the UNFCCC.

Activities:

- Compile a draft of the Second National Communication;
- Circulate the draft for review prior to public consultation.
- Incorporate the input from the consultation;
- Submit the revised draft to Cabinet for endorsement;
- Submit the final version of Belize’s SNC to the UNFCCC;
- Prepare hard and digital copies of the SNC for distribution.
- Launch the report in a side event during the next Conference of the Parties.

This task will be the responsibility of the National Focal Point with the support of the Project Manager and input from all consultants. The NFP will be expected to seek government’s endorsement of the SNC since it will be considered as a national report. The NFP should also be able to collaborate with the Project Steering and National Climate Change Committees, along with other stakeholders to lobby for the policy makers use of the SNC during preparation of national planning strategies and documents.

Output 4.8: Technology Needs Assessment

The Technology Needs Assessment being undertaken as an important outcome of the SNC exercises allows developing nations such as Belize to capitalize on one of the more important recommendations of the convention, “*the development and transfer of technology*”. This outcome is particularly key in helping Belize to cope with an ever evolving climate system. The TNA to be undertaken will follow the advice of the Subsidiary Body on Science and Technology Advice (SBSTA) as a guide to its preparation.

TNA preparation will be undertaken through a three step approach including Preliminary sector overviews intended to identify major emitting sector as well as vulnerable sectors, establishment of national criteria for identification, assessment and selection of appropriate technologies/ best practices, prioritization of sectors and selection of key technologies, and the identification of national barriers and policy needs as they relate to implementation of selected criteria.

The process is meant to be highly consultative in nature involving a broad cross section of governmental and private sector entities. The TNA synthesis report will be complemented by a report on the implementation mechanism which will identify actions and opportunities for implementation.

5. Institutional Framework for Project Implementation

The Designated Institution for the project will be the Ministry of Natural Resources, the Environment and Local Government, with the National Meteorological Services serving as the Executing Agency.

The Chief Meteorologist, in the capacity of the National Focal Point, will serve as the Project Director. He will be assisted by a National Project Manager contracted for the purpose of day-to-day management, and an Office Assistant to provide logistic support. Project Management will be provided with accommodation in the offices of the CARICOM Climate Change Centre (CCCC) located in the City of Belmopan, Belize.

The Chief Meteorologist/National Focal Point is supported by a cadre of trained technical staff housed in offices located at the Philip Stanley Wilberforce Goldson International Airport in Ladyville, Belize. He is also supported by clerical staff on the premises. The NFP and his staff are fully occupied with routine duties, not to consider the additional pressures endured during the period of the hurricane season. This project will likely cover at least two hurricane seasons, hence it will be more efficient to manage the project out of the CCC where space is available, experienced staff is easily accessible, and there is less risk of disruption caused by storms. The CCC has the necessary infrastructure and support services for project management as is demonstrated by the ongoing Mainstreaming Adaptation to Climate Change (MACC) project.

The NFP will be responsible for the execution of the project as the Project Director. He will chair and be assisted by the Project Steering Committee which will provide administrative oversight. The Project Manager will carry out the operational aspect of the project with the support of the various team leaders. Progress reports will be drafted and discussed with the PSC to ensure timeliness of deliverables. There will be frequent opportunities for stakeholder involvement through the consultation workshops, and the dissemination of information through the websites maintained by the Ministry.

Additional details of the institutional framework for implementation of the project is displayed at Appendix E.

6. Assessing Project Impact

Provision has been made to conduct an end-of-project evaluation a few months after the completion and submission of the SNC (Terminal Evaluation). A short term consultancy will be developed for this purpose. UNDP CO may decide to utilize the UNDP environmental Outcome Evaluation to further determine impact o the project.

At project initiation, a practical framework aimed at assessing capacity development and the potential impacts of the national communication exercise will be developed. This framework is expected to address five principal strategic areas: 1) Capacity to conceptualize and formulate policies, legislations, strategies and programmes; 2) capacity to implement policies, legislation, strategies and programmes; 3) Capacity to engage and build consensus among stakeholders; 4) Capacity to mobilize information and knowledge; 5) Capacity to monitor, evaluate, report and learn.

The framework will identify a few practical indicators to assess the impacts of the SNC in incorporating climate change concerns into development and sectoral planning as appropriate. The National Communications Support Programme (NCSP) would provide guidance on developing an impact assessment framework linked to different components of the SNC and the possible indicators that may be utilized to assess impacts.

Capacity development impacts will be given special consideration during framework development. Impacts on Capacity development may be assessed at three levels including:

- a) At the individual level- the process of changing attitudes and behaviors, most frequently through imparting knowledge and developing skills through training, learning by doing, participation, ownership, and process associated with increasing performance through changes in management, motivation, morale, and levels of accountability and responsibility.
- b) At the organization level- overall [performance and functioning capabilities such as developing mandates, tools, guidelines, and information management systems for the ability of the organization to adopt to change
- c) At the Systemic level- creation of enabling environments i.e. the overall policy, economic, regulatory and accountability frameworks in which institutions and individuals operate relationships and processes between institutions.

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. Working with UNDP/NCSP, Belize will design an impact assessment framework that meets the country needs and priorities in terms of facilitating the linkage between the SNC and development issues.

7. Budget

The financial investments provided for the SNC will enable the contracting of national consultants to conduct all of the surveys and associated exercises. Technical assistance will be accessed where necessary, particularly in the research effort to determine national emission factors under the Land-Use Change and Forestry Sector. This activity will foster international partnership among two tertiary level educational institutions, a national government department, a national non-government organization, and a regional institution. The lessons learnt and the experiences gained will probably be applicable and useful to the region.

7: Detailed Work Plan

An outline of the Work-Plan is provided for planning purposes. The finalization of the work-plan is expected to be one of the first activities completed upon project inception.

Outputs/Activities	QUARTERS (24 month Implementation Period)									
	1	2	3	4	5	6	7	8	9	10
Institutional Arrangements & Project Inception										
1. Contract the project office staff										
2. Establish technical teams										
3. Establish the Project Steering Committee										
4. Organize a project initiation workshop, include review and finalization of work plan										
5. Establish the electronic network among consultants and institutions										
6. Update the National Climate Change Web page										
National Circumstances										
1. Validate gaps in information										
2. Identify new sources of information										
3. Collect data and verify										
4. Rectify old gaps, and add new information										
5. Draft the National Circumstances Section										
National Greenhouse Gases Inventory of Emissions and Sinks										
Collect Biomass Data from other Forest Types										
1. Partners meet to finalize choices of forest types										
2. Deploy field teams to collect vegetation material from sample plots										
3. Dispatch material for analysis										
4. Retrieve results, document, and archive										
Assemble GHG Inventory Team										
1. Identify, contract, and mobilize consultants										
2. Review existing data from FNC and confirm sources of data										
3. Provide Consultants with IPCC software & other material										
Determine methodologies to be used for GHG inventory										
1. Analyze options for use of the IPCC methodologies										

2.. Decide on source categories										
Collect Inventory Data & estimate emissions using the IPCC Workbooks										
1. Consultants will identify sources of and collect data (including that from research at 4.2.1.										
2. Use IPCC methodology to decide on emissions factors										
3. Identify new or continuing data gaps										
4. Estimate emissions and sinks for 2000 reference year										
5. Develop Key Source Categories for 2000										
6. Undertake uncertainty assessments										
7. Review Inventory results for QA/QC										
8. Present inventory results for national consultation review										
9. Revise draft and finalize GHG inventory report										
Document and Archive GHG Inventory Results										
1. Validate the GHG inventory report with the USAID/EPA/CCAD Procedures Manual										
Programmes for Vulnerability Assessments and Adaptation Measures										
Update the Vulnerability assessment of the Belizean coastal zone										
1. Contract consultants and provide TOR										
2. Provide resource materials, etc.										
3. Technical review of consultants' draft report										
4. Submit results to Managers and Policy Makers										
5. Draft follow-up action plan with recommendations										
6. Document, disseminate, and archive the new report.										
Vulnerability Assessment in the Agriculture Sector (sugarcane, rice, citrus, bananas)										
1. Contract consultants and provide TOR										
2. Provide resource materials, etc.										
3. Provide computer models and other materials										
4. Consultants provide draft reports for review										
5. Revised reports are documented, shared with stakeholders, and archived.										
Vulnerability Assessment in the Health Sector										
1. Contract consultants and provide TOR										
2. Provide resource materials, etc.										

3. Analyze data, draft report describing findings, conclusions, and recommendations										
4. Consultants provide draft reports for review										
5. Revised reports are finalized, shared with stakeholders, and archived.										
Vulnerability Assessment in the Fisheries and Aquaculture Industries										
1. Contract consultants and provide TOR										
2. Provide resource materials, etc.										
3. Analyze data, draft report describing findings, conclusions, and recommendations										
4. Offer recommendations for Adaptation options to ensure sustainability of the sector										
5. Revised reports are documented, shared with stakeholders, and archived.										
Vulnerability Assessment and Adaptation Section of the SNC completed										
1. Develop the section based on the various reports										
2. Circulate the draft for technical review										
3. Present the draft for national consultation										
4. Finalize the VA & A chapter										
5. Document and archive										
Programmes containing Abatement measures										
Analysis of the abatement effects of Belize's hydro-electric generation										
1. Contract consultants and provide TOR										
2. Obtain and analyze data										
3. Estimate the emissions avoided										
4. Report on findings										
Determine reduction in Emissions by through utilization of biomass for electrical power generation										
1. Contract consultants and provide TOR										
2. Consultants meet with representatives of BSI & BEL to obtain data and information on the Co-generation project										
3. Estimate the potential emissions from this source										
4. Report on findings for the SNC										
Derive estimates of GHG emissions from Belmopan sewage treatment, and Bowen & Bowen waste water treatment										
1. Contract consultants and provide TOR										

2. Provide resource materials, etc.										
3. Collect data, information and estimate emissions										
4. Produce a draft report for review										
5. Document and archive final report										
6. Prepare report for SNC.										
Determine Abatement of GHG reductions by converting from garbage dumps to solid waste treatment facilities.										
1. Contract consultants and provide TOR										
2. Provide resource materials, etc.										
3. Collect data, information and estimate emissions										
4. Analyze impact of proper solid waste treatment										
5. Document results and Archive										
6. Complete Abatement section report.										
Conduct Project Impact Assessment										
Other Information relevant to implementation of the Convention										
Update Climate Modeling Systems										
1. Consult International Partners to identify appropriate technology										
2. Procure Software										
3. Install and operate the system										
Constraints and Gaps										
1. Liaise with the MACC project to ensure involvement in the design of the PEO programme										
2. Seek funds under regional and international programmes to facilitate greater representation at regional and international sessions.										
Technology Needs Assessment										

Appendix C: Stakeholder Matrix

The matrix summarizes, in table form, the potential contributions of the stakeholders by virtue of their mandates or terms of reference, to the completion of the project.

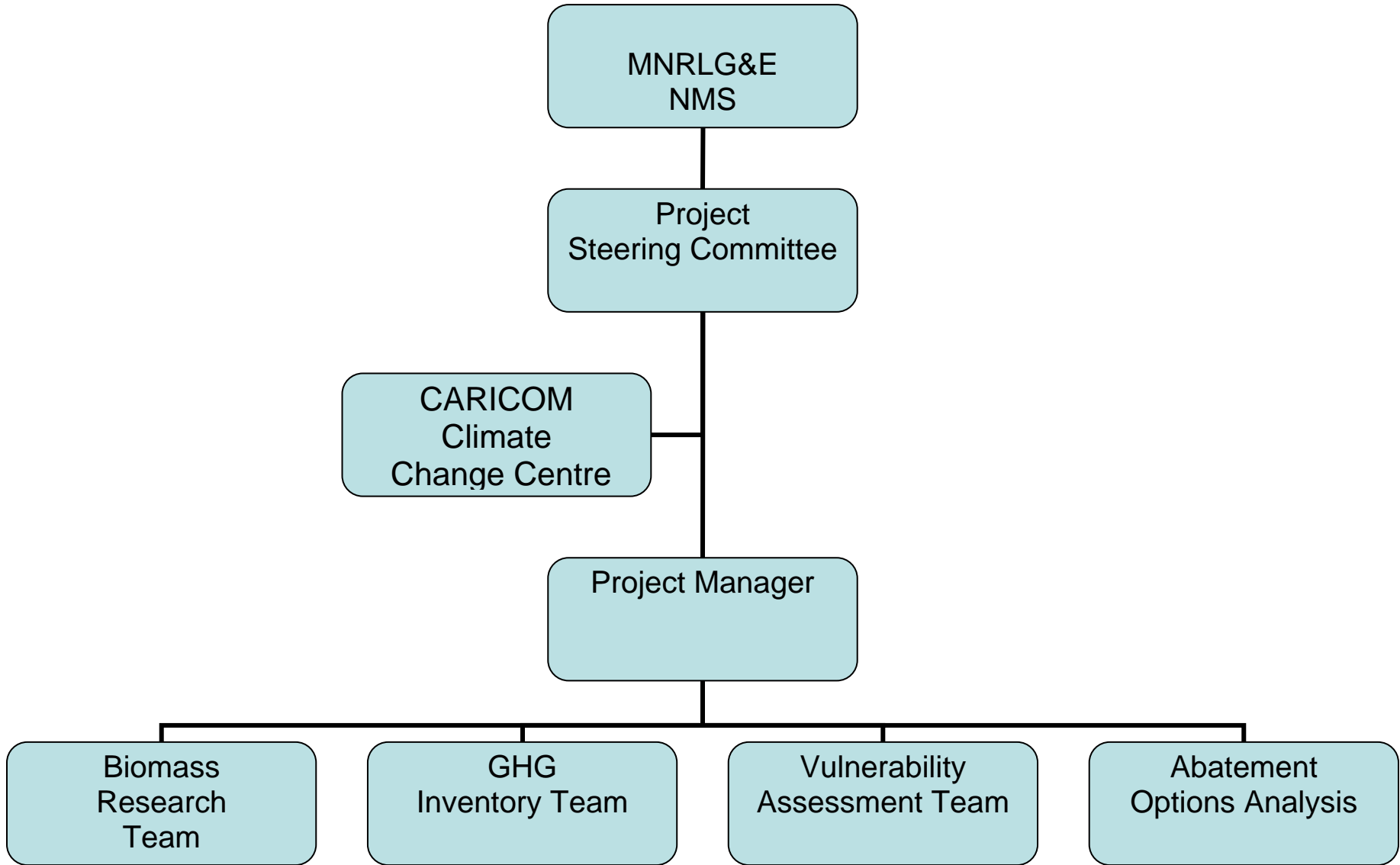
Name of institutions / stakeholders consulted	Stakeholder interests, official position or mandate	Reasons for inclusion	Role in the self-assessment process (e.g. consultation, data provider, etc.)
National Meteorological Service (NMS)	National Focal Point	Agency providing advice to government on Climate Change matters	Consultation, review of draft reports, data provider
Forest Department (FD)	Management of forest and wildlife resources	Managers of the resource that serve to mitigate climate change impacts	Data provider and technical review
Programme for Belize (PFB)	Sustainable management of large area of private land	Can share experiences and lessons learnt in land management and carbon sequestration activities	Technical assistance
Belize Fisheries Cooperatives Association	Membership organization for over 4000 national fishermen	Provider of input from the perspective concerned stakeholder	Focus group and public consultation
Belize Tourism Industry Association	Representatives of the private sector in the tourism industry	Private business representatives of a vulnerable priority sector	Focus group private sector consultation
Belize Tourism Board	The Government management of the tourism sector	Government representatives of a vulnerable priority development sector	Data provider and focus group consultation
Agriculture Department	Policy maker, and user of land resources	Government agency responsible for policy making and encouraging land-use changes	Data provider and technical review
Belize Enterprise for Sustained Technology (BEST)	Non-government organization engaged in technology transfer and local stakeholder empowerment	Opportunities for technology transfer and traditional knowledge	Facilitator of stakeholder participation and Consultation
Ministry of Health	Management of the provision of health services countrywide	Government input for a vulnerable sector	Technical review and data source
Village Council Associations	Provided governance at the local stakeholder level	Facilitator of stakeholder participation	National consultation
Lands and Surveys Department	Government department responsible for land management	Responsible for land management at the national level	Data source and technical review

Appendix D: Tier 1 Analysis – Key Source Level Assessment – 1994

IPCC Source Categories	Greenhouse Gas	Current Year Estimate	Level Estimate	Cumulative Total of Emissions
Agriculture: Emissions from Agriculture residue burning	N ₂ O	4092.00	0.23	23.28 %
Agriculture: Emissions from Savannah burning	N ₂ O	4092.00	0.23	46.55 %
Energy: Mobile combustion – road vehicles	CO ₂	2168.16	0.12	58.89 %
Agriculture: Emissions from enteric fermentation in Domestic Livestock	CH ₄	1761.96	0.10	68.91 %
Energy: Manufacturing industries and construction	CO ₂	1398.14	0.08	76.86 %
Energy: Emissions from stationary combustion	CO ₂	1111.43	0.06	83.18 %
Agriculture: Emissions from Rice production	CH ₄	958.02	0.05	88.63 %
Agriculture: Emissions from Manure Management	CH ₄	715.93	0.04	92.70 %
Energy: Other Sectors-Residential	CO ₂	351.99	0.02	94.71 %
Energy: Other Sectors-Residential	CH ₄	328.85	0.02	96.58 %

Belize has only completed one inventory of greenhouse gases and sinks to date, hence the Tier 1 Level Assessment methodology was used for the Key Source analysis. This was completed for the reference year 1994 and reported in the First National Communication.

Appendix E: Flow Chart for Institutional Arrangements



APPENDIX F: TERMS OF REFERENCE

1. National Project Manager

In consultation with the Project Steering Committee (PSC), the Project Manager (PM) is responsible for day-to-day management, co-ordination and supervision of the implementation of the preparation of Belize's Second National Communication to the UNFCCC. Specifically, his/her responsibilities are but not limited to the following:

- To supervise and ensure the timely implementation of the project relevant activities as scheduled in the work plan;
- Prepare a detailed work plan for the project and draft terms of reference for the subcontracts (in consultation with the PSC);
- Compile the various section reports and content of the overall SNC document in consultation with Consultants;
- Draft the scope of the work and TOR and other procurement documentation required to identify and facilitate recruitment of experts and consultants;
- Identify and assist with hiring/subcontracting the national experts and institutions (in consultation with the PSC);
- Coordinate the work of the GHG Inventory consultants;
- Coordinate the work of the Vulnerability Assessment and Adaptation Consultants;
- Supervise project support staff and/or national consultants who are recruited to provide technical assistance
- Organize and supervise the workshops and training needed during the project;
- Liaise with the relevant ministries, national and international research institutes, NGOs, and other relevant institutions in order to involve their staff in project activities, and to gather and disseminate information relevant to the project;
- Prepare periodic progress reports of the project;
- Summarize and synthesize the results of the project;
- Draft certain section of the SNC in collaboration with the National Focal Point – National Circumstances and Constraints and Gaps;
- Identify necessary follow-up activities and mobilize other resources to the extent available;
- Further the process of synergy between the UNFCCC SNC with the UNCBD and UNCCD;
- Draft Belize's Second National Communication in collaboration with the National Focal Point, and participating consultants;
- Ensure that the SNC process is in the line with guidance provided by the COP of the UNFCCC;
- Facilitate the reintroduction of Belize's climate change web page;
- Collaborate with all relevant stakeholders and the Project Steering Committee and other partners to ensure their involvement in the SNC.

Qualifications and Experience

- Preferably master's degree in environment-related studies and other related disciplines;
- Good understanding of Belize's environment/development issues as and Climate Change activities in Belize;
- At least four to six years experience relevant to the project;

- Excellent communication (Written and Oral) Skills;
- Experience in project management;
- Demonstrated experience in working with government, donors and the United Nations system;
- Appropriate experience working with government structures at local levels, and working with NGOs and private sector;
- Substantial involvement in the preparation of the national GHG inventory and the initial National Communication is mandatory
- Knowledge of methodologies for inventories (*IPCC Revised 1996 Guidelines* and *Good Practice Guidance, etc*)
- Substantial experience in Government and in inter-departmental procedures preferred
- Familiarity with international negotiations and processes under the UNFCCC preferred
- Familiarity with computers and word processing.

Qualifications and experience

- An advanced degree (at least MSc. or equivalent) in energy, environmental management or other field relevant to the project
- A minimum of 7 years of working experience in the area relevant to the project;
- A demonstrated ability in managing projects, and in liaising and co-operating with all project personnel including government officials, scientific institutions, NGOs, and private sector;
- Fluency in the government official language;
- A very good knowledge in English is absolutely necessary.

2: Project Steering Committee

The Ministry of Natural Resources and the Environment is the Executing Agency for Climate Change Projects through its National Meteorological Service (NMS). The Chief Meteorologist, head of the NMS has been appointed as Belize's National Focal Point (NFP) for Climate Change. The NFP serves as the chair of the Climate Change Committee. It is planned that the Project Steering Committee will be established as a sub-committee of the Climate Change Committee with members drawn from other organizations. The support of the both the PSC and the CCC will ensure successful implementation of the project.

The duties, responsibilities and operating rules of the above PSC are as following:

- Provides assistance and political support to the National Focal Point, National Project Manager and national experts and counterparts during the implementation process of all project activities.
- Reviews and make necessary comments on all draft documents prepared by the national climate change consultants.
- Receives information on regular basis on the status of the implementation of the project activities and problems to be faced with from the National Project Manager.

Rules under which PSC operates:

- NPM serves as Moderator of PSC meetings. NFP chairs the meetings
- PSC meets quarterly or at four-month intervals during the project life-time. In special cases the PSC shall meet upon the initiative of the National Project Manager or the NFP.
- When the PSC does not meet, the NPD and NPM may request inputs and support from individual members of the PSC.

In principle, the NSC shall operate on the basis of three quarters majority.

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 advice 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.

Appendix G: Endorsement letter - GEF Operational Focal Point



GOVERNMENT OF BELIZE

**Ministry of National Development,
Investment & Culture**

*Fax: (501) 822-3673
Tel: (501) 822-2526/822-2527
Our Ref: IA/UN/1/12/05(12)
Your Ref:*

*P.O. Box 42
Administration Building
Belmopan
Belize, Central America*

November 17th, 2005

Ms. Dianne Wade-Moore
Environmental Programme Officer
United Nations Development Programme
United Nations House
Constitution Drive, Belmopan City
Belize

Dear Ms. Wade-Moore,

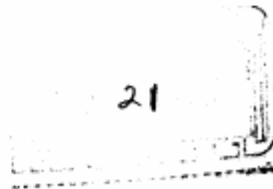
The Ministry of National Development, Investment & Culture in its capacity as GEF Operational Focal Point for Belize, wishes to inform you of its endorsement for the United Nations Development Programme Project Document entitled “**Enabling Activities for the Preparation of Belize’s Second National Communication to the United Nations Framework Convention on Climate Change**”.

We believe that this project will give Belize the opportunity to strengthen its technical capacity to address the challenges associated with Climate Change while assisting Belize in meeting its obligations to the UNFCCC.

Sincerely,

A handwritten signature in black ink, appearing to read "H. O'Brien".

**Hugh O'Brien
GEF Operational Focal Point - Belize
Ministry of National Development**



Appendix H: Endorsement letter - UNFCCC National Focal Point



Philip Goldson International Airport
PO Box 717
Belize City, BELIZE

Tel: 501-225-2011, 2012, 2054
Fax: 501-225-2101
e-mail: cfuller@btl.net

2 November 2005

My Ref: MA/0604/05
Your Ref:

Ms. Dianne Wade-Moore
Environmental Programme Officer
United Nations Development Programme
Belmopan
Belize

Dear Ms. Wade-Moore,

I have reviewed the United Nations Development Programme Project Document "Enabling Activities for the Preparation of Belize's Second National Communication to the United Nations Framework Convention on Climate Change". It reflects the national consultations undertaken to develop the project document. The document details the requirements of Belize to meet its obligations to the UNFCCC. It also provides for the technical and financial resources that Belize will require meet those obligations.

I therefore request that the document be submitted to the financial entity of the Convention and request full funding for its implementation.

Thank you for your attention to this matter.

Sincerely yours,

Carlos Fuller
Chief Meteorologist
Belize Focal Point on Climate Change

SIGNATURE PAGE

Country: Belize

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

N/A

Expected Outcome(s)/Indicator (s):

Goal 3: Managing Energy and Environment for Sustainable Development
Objective C: Sustainable Management of Environmental Resources (Second Country Cooperation Framework Belize (2002-2006)
Belize's Second National Communication Prepared and endorsed by the government of Belize for submission to the UNFCCC

Implementing partner:

Ministry of Natural Resources, local Government and Environment (Meteorological Department)

Other Partners:
(Formerly implementing agencies)

Caribbean Community Climate Change Center

Programme Period: 2004-2006
Programme Component: _____
Project Title **PIMS #3299 CC EA Second National Communication of Belize**
Project ID: **00039714**
Project Duration: 2 years
Management Arrangement: **NEX**

Budget	\$455,000
General Management Support Fee	_____
Total budget:	\$455,000
Allocated resources:	_____
• Government	_____
• Regular	_____
• Other:	
○ Donor	_____
○ Donor	_____
○ Donor	_____
• In kind contributions	72,500
• Unfunded budget:	_____

Agreed by (Government of Belize: Ministry of National Development):
_____ Date _____

Agreed by (Government of Belize: Ministry of Natural Resources, Local Government and Environment):
_____ Date _____

Agreed by (UNDP El Salvador/ Belize):
_____ Date _____