

UNDP Project Document

Government of the Kingdom of Tonga

United Nations Development Programme

ENABLING ACTIVITIES FOR THE PREPARATION OF TONGA'S THIRD NATIONAL COMMUNICATION TO THE UNFCCC

Brief Description

In accordance with Article 12, paragraph 1 of the UNFCCC, all parties are required to provide information in their national communications: (a) National inventory of GHG emissions and removals, b) Programmes containing measures to facilitate adequate adaptation to, and mitigation of climate change, and c) Any other information considered relevant for the achievement of the objectives of the UNFCCC. In this regard this project will enable Tonga to prepare and submit its third national communication building on and strengthening the activities that have been carried out in preparing its second national communication. The project will further strengthen the national capacities and will further raise general knowledge and promote awareness on climate change and its effects. It will also strengthen the visibility of climate change issues on the national agenda through strengthened cooperation and increased involvement of all relevant stakeholders in the process. In addition, it will continue to strengthen and build national capacities for the effective implementation of the UNFCCC.

United Nations Development Programme
Country: Tonga



PROJECT DOCUMENT¹

UNDAF Outcome(s)/Indicator(s): N/A

Expected Outcome(s)/Indicator (s): Enhanced Government capacity and commitment to meet its obligations under UNFCCC

Expected Output(s)/Indicator(s): Environmental considerations integrated into national development policies, strategies, programmes and projects

Implementing partner: Ministry of Environment and Climate Change

Other Partners: UNDP

Programme Period:	2012-2015
Programme Component:	Energy and Environment for Sustainable Development
Project Title:	ENABLING ACTIVITIES FOR THE PREPARATION OF TONGA'S THIRD NATIONAL COMMUNICATION TO THE UNFCCC
Atlas Award ID:	00071688
Project ID:	00085018
PIMS #:	4480
Project Duration:	4 years
Management Arrangement:	NEX
PAC Meeting Date:	

Total resources required	520,000	_____
Total allocated resources:	520,000	_____
• Other:		
○ GEF	480,000	_____
○ Government	40,000	_____

Agreed by (Government): _____
Date/Month/Year

Agreed by (Executing Entity/Implementing Partner): _____
Date/Month/Year

Agreed by (UNDP): _____
Date/Month/Year

¹ For UNDP supported GEF funded projects as this includes GEF-specific requirements

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ACRONYMS

APRs	Annual Project Reports
BPoA	Barbados Programme of Action for small islands developing States
CBD	Convention on Biological Diversity
CCA	Common Country Assessment
CCS	Climate Change Section
CoP	Conference of the Parties
CP	Country Programme
ENSO	El Nino-Southern Oscillation
GHG	Greenhouse Gases
ICCAI	International Climate Change Adaptation Initiative
IM	International Meeting in Mauritius
INC	Initial National Communication
IPCC	Intergovernmental Panel on Climate Change
JPoI	Johannesburg Plan of Implementation
JNAP	Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management
MDGs	Millennium Development Goals
MECC	Ministry of Environment and Climate Change
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Self-Assessment
NECC	National Environment Coordinating Committee
NEX	National Execution
NGO	Non-Government Organization
PICs	Pacific Island Countries
PIGGAREP	Pacific Islands Greenhouse Gas Abatement and Renewable Energy Project
PIREP	Pacific Islands Renewable Energy Project
PMU	Project Management Unit
QPRs	Quarterly Projects Reports
SBAA	Standard Basic Assistance Agreement
SIDS	Small Islands Developing States
SNC	Second National Communication
SPREP	Secretariat of Pacific Regional Environment Programme
TWG	Technical Working Group on Climate Change
UNCCD	United Nations Convention on Combating Desertification
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
WSSD	World Summit on Sustainable Development
TERM	Tonga Energy Road Map
TMS	Tonga Meteorological Services
V&A	Vulnerability and Adaptation

1. ELABORATION OF THE NARRATIVE

1.1. SITUATION ANALYSIS

Tonga is an archipelago of over 172 islands with a combined land and sea area of 720,000 km² and a total land area of 747 km². Thirty-six of these islands are inhabited, making up the four islands groupings: Tongatapu and 'Eua (South), Ha'apai (central); (Vava'u (north); Niuafu'ou and Niua Toputapu (far north). The southern group (Tongatapu and Eu'a) and the northern group of islands (Vava'u, Niuafu'ou and Niuatoputapu islands) are described as "the raised coral islands" and the central group islands (Ha'apai) are "low coral islands." (Figure 1)

Tonga's current climate is characterized by two distinct seasons – a warm wet season from November to April and a cooler dry season from May to October. Almost two-thirds of annual rainfall comes during the wet season. Tonga's rainfall is affected by the South Pacific Convergence Zone (SPCZ); a band of heavy rainfall caused by air rising over warm water where winds converge, resulting in thunderstorm activity. This band of heavy rainfall extends from the Solomon Islands to east of the Cook Islands and is most intense during Tonga's wet season.

The rainfall regime is very much associated with the semi-permanent South Pacific Convergence Zone (SPCZ), situated within the equatorial easterly trades and the sub-tropical south-easterlies. Annual rainfall is defined by the Wet and Dry seasons. A pronounced wet season (also the cyclone season) is noticeable from November to April and a dry season runs from May to October. Wet season contributes to about two thirds of the total annual rainfall. The wettest months are January, February and March when monthly rainfall may exceed 250mm.

Temperatures in Tonga change from season to season and are strongly influenced by the surrounding ocean temperature. A 5 degrees difference occurs between the warmest month (February) and coolest month (July) at Nuku'alofa, the main center of government and business. Temperatures in the winter months are affected by sub-tropical high pressure systems that bring cooler air from the south. Thus mean annual temperatures for Tonga vary according to latitude from 27 at Niu'afou in the far north to 24 in the southern island of Tongatapu.

Temperature variations throughout the country show an increase in daily and seasonal variations with increasing latitude. During the warm wet season (November- April), the average temperature ranges from 25-26°C whereas at cool dry season (May – October), the average temperature ranges from 21-24°C.

On a decadal basis the occurrence of tropical cyclones in Tonga shows an increasing trend with some evidence that the intensity of cyclones has increased since the 1980's in Tonga.

Since the ratification of the UN Framework Convention on Climate Change (UNFCCC) on 02 July 1998 and the submissions of its initial and second national communication to the UNFCCC on 28 July 2005 and May 02 2012 respectively the country has created an institutional set-up to focus on addressing climate change issues and concerns and to integrate climate change issues into the national planning processes. Of particular note is the development and adoption of Tonga's national climate change policy which was endorsed by government in 2006 and the establishment of the Ministry for Environment and Climate Change which coordinates and implements all climate change programmes, projects and activities in the country. Climate change policy identified key issues which affect the ability of Tonga in addressing climate change issues and concerns. These key issues

include a lack of knowledge, lack of physical and financial resources, a lack of comprehensive environmental legislation, inherent difficulties in discerning overlapping and unclear management powers, lack of appropriate policy support, lack of public participation, coupled with a basic lack of political will and commitment for sustainable development.

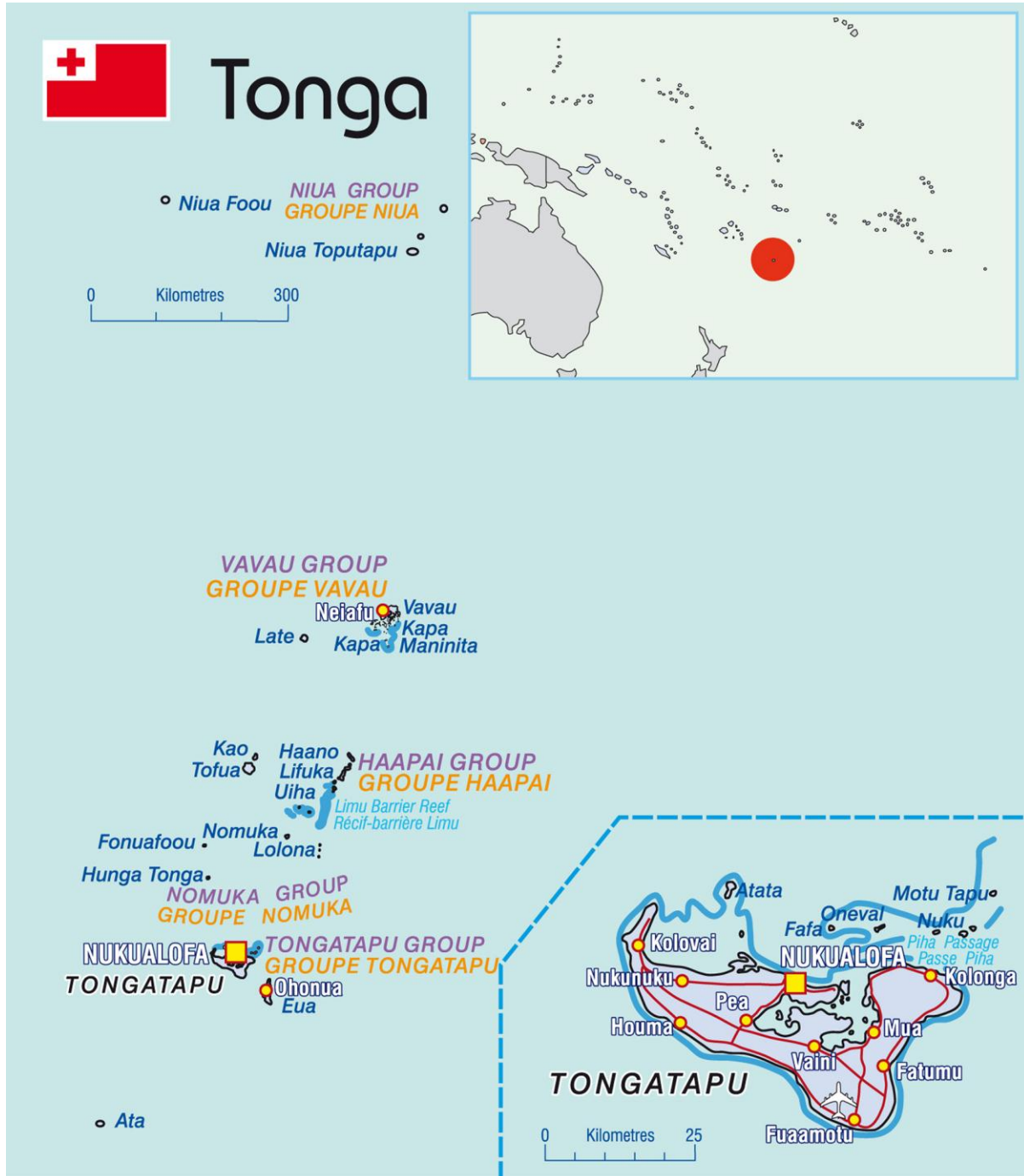


Figure 1: Map of Kingdom of Tonga.

In recognition of the need to implement the national climate change policy and disaster risk management and the need to mainstream climate change and disaster risk management into national and sector strategies, Tonga has also prepared a Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management (JNAP). JNAP was developed through nation-wide stakeholder consultations and numerous stakeholder workshops and meetings conducted over a period of 12 months. The JNAP has six main goals, each with any number of specific activities relating to addressing adverse impacts of climate change and variability. In addition, Tonga has been implementing a number of sustainable development programmes which have strong linkages to its reporting commitments under other multilateral environmental agreements. These reports include the National Biodiversity Strategy and Action Plan (NBSAP) under the Convention on Biological Diversity (CBD) and the Report on Millennium Development Goals. With the support of the GEF, Tonga has also completed the identification of its capacity building needs relating to the implementation of the UNFCCC, CBD and the UNCCD through National Capacity Self-Assessment, and is currently implementing a sustainable land management project.

1.2. STRATEGY

In accordance with Article 12, paragraph 1, of the Convention, Tonga will prepare its Third National Communications (TNC). The proposed project will assist the Government of Tonga in addressing some of the issues, concerns, gaps and difficulties encountered in the preparation of its national communication and in its efforts to effectively implement the UNFCCC. Tonga will prepare its third national communication using the UNFCCC guidelines adopted by the Conference of Parties (decision 17/CP.8).

The activities within the TNC are an update of, and an improvement of the work done under its SNC, as outlined in the scope of the national communication². Additionally, particular attention will be placed on implementation of activities that will address gaps, constraints and needs identified in the TNC stocktaking exercise, and in the second national communication consistent with the UNFCCC guidelines for the preparation of national communication from non-Annex I Parties. Lack of human resources and funding constrain the ability of Tonga in addressing the resources constraint. Dealing effectively with risks posed by climate change and related hazards such as tropical cyclones, droughts and sea level rise will be a huge challenge for Tonga in the foreseeable future. Thus, any response strategy addressing the climate change and related hazards will require additional human, financial and technical resources. It will also require strong leadership with clear roles and responsibilities for addressing specific climate change risks and hazards in an integrated manner.

The project is fully in line with Tonga's national development objectives, its national strategy for the implementation of the UNFCCC and its pursuit of improving natural resource management and promoting environmental sustainability and its Joint National Action Plan for Climate change Adaptation and Disaster Risk Management 2010-2015 (JNAP). Tonga has made a significant progress towards addressing climate change issues and concerns as reflected in the development of the National Climate Change Policy and the JNAP. The policy and action plan are underpinned by the newly adopted National Strategic Planning Framework 2009-2015.

The UNDP is assisting Tonga respond to current and emerging development challenges such as poverty reduction and millennium development goals, good governance and human rights, crisis

² Scope of the national communication is stipulated in Article 12, paragraph 1, of the Convention.

prevention and recovery and environment and sustainable development. This is achieved through strategic areas of focus covering: institutional framework for sustainable environmental management and energy development; monitoring and assessment of environmental sustainability; and national capacity for participation in global conventions, regulatory regimes and funding mechanisms for environmentally sustainable development. The support for the preparation of the third national communication and improving the country's capacities to implement the UNFCCC, will directly contribute to the achievement of the UNDP-Tonga's UNDAF and Country Programme Action Plan 2008-20012.

The project will make use of, and strengthen where necessary, the capacity built and institutional arrangements that were set up during the preparation of the Second National Communication. Tonga has produced the INC and SNC using the same experts for continuity and sustained capacity in Tonga. Those who had participated in the national communication process will be encouraged to build capacity in their respective sectors and organisations, thus contributing to capacity strengthening across relevant organistaions. The institutional set up will be strengthened as under the JNAP secretariat. Capacity building activities will still form part of the project and will be provided through training workshops, and encouragement of the information exchange between the national and relevant regional and international institutions are considered critical for increasing the level of understanding of issues and concerns relating to adverse impacts of climate change. This activity will be continued in the preparation of the TNC and will complement existing capacity, as well as address capacity gaps that were identified during the TNC stocktaking exercise.

As with the SNC project, this project will be executed by the Ministry of Environment and Climate Change (MECC) who is responsible for all climate change activities in Tonga and also acts as an operational Focal Point for the UNFCCC in collaboration with other relevant ministries and institutions as listed on page 23, section D) particularly those that make up the country's National Environment Coordinating Committee (NECC) and the Technical Working Group on Climate Change (TWG). The National Climate Change Coordinator (NCCC) will work closely with the national focal points of the Global Environment Facility (GEF) and UNFCCC, NECC, TWG and UNDP-MCO in Fiji in implementing this project.

1.3. MANAGEMENT ARRANGEMENTS

Please refer to the Section 5, Institutional Framework and Project Implementation, Appendix B: Technical Components of the project proposal.

1.4. MONITORING AND EVALUATION

The same monitoring and evaluation as in the preparation of SNC will apply in this project implementation. Thus, UNDP guidelines and procedures on reporting, monitoring and evaluation will be followed throughout the project cycle. The project's National Coordinator will provide regular progress reports to UNDP and copy to all members of NECC, the TWG and the Director of NECC who will be hosting and executing the project. These reports will enable the NECC and the UNDP to evaluate the progress of the project on a regular basis and identify difficulties and shortcomings with a view to overcoming them during the period of project implementation. These reports will be reviewed by UNDP for their quality and standard, comprehensiveness, and conformity to the proposed terms of reference and dates of completion. In addition, a mid-term review of the project may be conducted by an independent consultant.

The NECC will meet once every three months as this is considered appropriate level of engagement with key stakeholders to review project implementation activities and provide scientific, technical, policy and strategic guidance. The minutes of these meetings will be shared with all participating institutions including UNDP. The TWG will meet once every month to consider and agree on the various aspects of the implementation of the project.

An independent financial audit will be conducted according to the UNDP rules and procedures. During the implementation of the project, regular financial statements will be prepared and provided to UNDP for accessing funds for project activities.

Monitoring Responsibilities and Events

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

Day to Day Monitoring of Implementation Progress – This will be the responsibility of the TWG based on the project's Annual Work Plan and its indicators. The Project Management Unit (PMU) will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely manner.

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

Project Monitoring Reporting

The project's National Coordinator in conjunction with the UNDP-GEF extended team will be 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.

Quarterly Progress Reports

Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform

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 management unit.

Bi-annually:

- Questionnaires to indicate progress and identify bottlenecks as well as technical support needs will be carried out twice a year.
- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc...

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 management unit 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. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

Audit Clause

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

Audit on project will follow UNDP Financial Regulations and Rules and applicable Audit policies.

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 Tonga and the United Nations Development Programme, signed by the parties. The host country implementing agency (UNDP-Tonga) shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

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

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

- Revision of, or addition to, any of the annexes to the Project Document;
- 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;
- 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,
- Inclusion of additional annexes and attachments only as set out here in this Project Document.

2. TOTAL BUDGET

Award ID:	00060093	Project ID(s):	00075481
Award Title:	Tonga: Third National Communication		
Business Unit:	FJI10		
Project Title:	Tonga: Third National Communication		
PIMS no.4480			
Implementing Partner (Executing Agency)	Ministry of Environment and Climate Change, Government of Tonga		

GEF Outcome/Atlas Activity	Responsible Party/Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	
OUTCOME 1: GHG Inventory	Party 1	62000	GEF	71200	International Consultants	\$2.000	\$10.000	\$0	\$0	\$12.000	
				71300	Local Consultants	\$10.000	\$10.000	\$10.000	\$5.000	\$35.000	
				72100	Contractual services	\$10.000	\$10.000	\$10.000	\$10.000	\$40.000	
				71600	Travel	\$0	\$5.000	\$5.000	\$0	\$10.000	
				72205	Information Technology Equipment	\$2.000	\$2.000	\$1.500	\$1.500	\$7.000	
					Total Outcome 1	\$24.000	\$37.000	\$26.500	\$16.500	\$104.000	
OUTCOME 2: Vulnerability and Adaptation Assessments	Party 1	62000	GEF	71200	International Consultants	\$15.000	\$15.000	\$10.000	\$5.000	\$45.000	
				71300	Local Consultants	\$20.000	\$20.000	\$10.000	\$5.000	\$55.000	
				72100	Contractual services	\$15.000	\$15.000	\$15.000	\$15.000	\$60.000	
				71600	Travel	\$5.000	\$5.000	\$5.000	\$5.000	\$20.000	
				72205	Information Technology Equipment	\$2.000	\$1.500	\$1.000	\$0	\$4.500	
					Total Outcome 2	\$59.500	\$59.000	\$43.500	\$32.500	\$194.500	
OUTCOME 3: Mitigation Analysis	Party 1	62000	GEF	71200	International Consultants	\$5.000	\$5.000	\$0	\$0	\$10.000	
				71300	Local Consultants	\$2.500	\$2.500	\$2.500	\$2.500	\$10.000	
				72,100	Contractual services	\$5.500	\$6.000	\$6.000	\$6.000	\$23.500	
				71600	Travel	\$1.000	\$1.500	\$1.500	\$1.500	\$5.500	
				72200	Equipment and furniture	\$2.500	\$2.500	\$2.500	\$0	\$7.500	
					74500	Miscellaneous Expenses	\$3.000	\$2.000	\$2.500	\$2.000	\$9.500
					Total Outcome 3	\$19.500	\$19.500	\$15.000	\$12.000	\$66.000	

OUTCOME 4: National circ; Conts. & gaps, financial, tech, & capacity needs; Other relevant info	Party 1	62000	GEF	71200	International Consultants	\$5.000	\$5.000	\$5.000	\$0	\$15.000
				71300	Local Consultants	\$5.000	\$5.000	\$5.000	\$2.500	\$17.500
					Contractual services	\$5.000	\$10.000	\$10.000	\$2.500	\$27.500
				74500	Miscellaneous Exp	\$2.500	\$2.500	\$2.500	\$0	\$7.500
						Total Outcome 4				
						\$17.500	\$22.500	\$22.500	\$5.000	\$67.500
Project Management, including Monitoring and evaluation	Party 1	62000	GEF	71405	Contractual Services - Individual	\$11.000	\$11.000	\$11.000	\$10.000	\$43.000
				74110	Audit Fees	\$0	\$0	\$5.000	\$0	\$5.000
						Total Management				
						\$11.000	\$11.000	\$16.000	\$10.000	\$48.000
PROJECT TOTAL						\$131,500	\$149,000	\$123,500	\$76,000	\$480,000

**Summary of
Funds:**³

	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total
GEF	\$131,500	\$149,000	\$123,500	\$76,000	\$480,000
Donor 2 (other donors)	\$	\$	\$	\$	\$
Donor 3 (cash and in-kind) e.g. Government	\$10,000	\$10,000	\$10,000	\$10,000	\$40,000
TOTAL	\$141,500	\$159,000	\$133,500	\$86,000	\$520,000

³ Summary table should include all financing of all kinds: GEF financing, co-financing, cash, in-kind, etc...

APPENDIX A: SUMMARY REPORT OF THE SELF-ASSESSMENT EXERCISE

A. DESCRIPTION OF THE PROCESS AND APPROACH ADOPTED FOR THE STOCKTAKING EXERCISE

The same process and approach used for SNC stocktaking was used to solicit and collect information from various ministries, agencies, institutions of government and non-government organizations for the Third National Communication. Thus it included gathering of information (including policy documents) relating to the activities of the INC, SNC and other similar activities that were already available to the team members, and meetings/consultations and workshop held with representatives of relevant ministries, agencies institutions of government and non-government organizations.

The consultations were focused on the activities relating to the preparation of the SNC of Tonga, in line with the scope of the national communication. This included information about institutional arrangements, and opportunities for promoting synergy between the various activities and organizations, priorities for the TNC and information gaps.

The elements of information covered in the consultations included work carried out under previous climate change enabling activities, gaps/uncertainties identified, new areas of work to be undertaken, priorities for TNC, opportunities for promoting synergy/linkages with related programmes (NCSA, NBSAP), and lessons learned and or best practices in SNC processes that would be useful for the preparation of TNC. The discussions were centered on the following components of the national communication:

- a) National circumstances (development priorities, geography and climate, information needs for adaptation, and mitigation, capacity needs and constraints, institutional arrangements);
- b) Greenhouse gas (GHG) inventories (main sources of emissions and removals, data sources, adequacy and reliability, accessibility, availability and management of data, capacity needs and constraints);
- c) Programs containing measures to facilitate adequate adaptation to climate change (vulnerable sectors, gaps and uncertainties, methods and tools, methods for assessing adaptation options, capacity needs and constraints, priorities for vulnerability and adaptation in the TNC);
- d) Programs containing measures to mitigate climate change (main sectors, methods and tools, and priorities to be addressed and the linkages to the other development priorities);
- e) Other information such as technology needs and other technology transfer-related issues, Phase II and SNC outcomes, research and systematic observation, education, training and public awareness needs and the linkages to NCSA and other capacity building activities
- f) Constraints and gaps, and related financial, technical and capacity needs (areas for improvement and any new information to be included).

Institutions and individuals involved

A total of 15 ministries, agencies and institutions of government and non-government organizations in Tonga involving 35 experts were consulted during the stocktaking and stakeholder consultation workshops. Many of the individuals and/or organizations are also members of, and/or are represented on, the National Environment Coordinating Committee (NECC) and the Technical Working Group on Climate Change (TWG). These consultations provided the opportunity for all individuals and organizations to discuss the main issues/concerns they have in addressing climate change and to consider some of the common elements including gaps, new areas of work and priorities for the third national communication. The consultations were carried out over three days.

B. MAIN OUTCOMES OF THE STOCKTAKING, INCLUDING PRIORITIES IDENTIFIED

The work carried out under the previous enabling activities such as the preparation of initial national communication and SNC indicated that a great deal of information is now available for the preparation of the TNC. However, there are many gaps and constraints which had been identified and which will be addressed in the TNC.

NATIONAL CIRCUMSTANCES

While the physical geography of Tonga and its islands remain the same as was previously reported in its SNC, some of its physical and socio-economic characteristics are being influenced by the interactions of the ocean-atmosphere system and the development priorities it wants to pursue. However, the way in which Tonga implements the UNFCCC will depend partly on how well it can respond to the vagaries of climate change, climate variability and sea-level rise and the need for economic development.

Tonga has embarked on an economic growth policy which is focused on improving its economic and environmental performance, education, private sector development and creation of employment, agricultural opportunities, social structure, infrastructure and services, tourism and public sector efficiency. However in recent years Tonga has often been affected by external factors that contributed to economic contraction. Despite this setback, the country remains one of the best performers among World Bank members in the Pacific in terms of making progress toward the MDGs. Extreme poverty is almost non-existent, and Tonga is on track to meet goals to significantly reduce maternal and child mortality, achieve universal primary education with no disparities between boys and girls.

Tonga is highly vulnerable to external economic shocks and natural disasters. Small size combined with a large distance from the nearest large market means that the country is unable to exploit economies of scale in production. A narrow resource base and a small market result in a production structure that is highly undiversified. Remittances account for a large share of the gross domestic product (GDP). Size and remoteness also impact the cost of key imports such as petroleum, exacerbating the risk to the economy from external shocks.

The knock-on effects of the global economic crisis resulted in GDP contractions of 0.4 percent in the fiscal year 2008/09 and an estimated 0.5 percent in fiscal year 2009/10 (IMF estimate). The GDP growth in Tonga has not exceeded 2 percent in any of the last five years. Domestic political disturbances in 2006 caused widespread damage in the capital Nuku'alofa. The economy rebounded to grow by 2 percent the following year but the country was unable to build on that momentum as it

was adversely impacted by the global economic crisis. In addition, the country was buffeted by two natural disasters, a tsunami on September 29 2009 causing loss of life and significant material damage and a tropical cyclone in February 2010.

With respect to development policy context, Tonga has developed a number of key policies that guide its work on addressing climate change issues and concerns: These include

Activities since INC and SNC completion include:

- The development of the National Climate Change Policy 2005,
- The establishment of the Ministry of Environment and Climate Change in 2008 which is the operational national focal point for the UNFCCC
- The shift from strategic development planning process to development of a forward-looking National Strategic Planning Framework 2010-2015 (NSPF), and
- The development of the Joint National Action Plan on Climate change Adaptation and Disaster Risk Management 2010-2015 (JNAP).
- Planning and Urban Management Act incorporating provisions for Environmental Impact Assessment (EIA) processes and climate change issues/concerns.
- Emergency Management Act 2007 for emergency operations for onset, during and after natural and anthropogenic disasters, and
- Tonga National Infrastructure Investment Plan focusing on energy , telecommunications, ports, shipping, water and sanitation, roads, and airports.

Some of the pertinent information from these reports and documents will be useful for incorporation in the national circumstances section of the TNC. This will include analyses of national development priorities and policies that are relevant to addressing climate change in Tonga as well as incorporating climate change concerns in sectors such as energy, transport, tourism, agriculture, fisheries, health and waste.

Tonga's ability to respond effectively to addressing climate change issues and problems will depend on the support it receives from its development partners (multilateral and bilateral donors) and its capacity to provide resources (human/institutional, technical and financial) towards addressing climate change and related development issues.

NATIONAL GREENHOUSE GAS INVENTORY

A number of gaps/issues were identified in the stocktaking and consultations including lack of activity data for land use change and forestry, industrial processes, agriculture and waste. Some energy data is readily available (especially from fuel combustion) but not necessarily in the form that can be used for inventory calculation. Additionally, energy from biomass is not accounted fully because there is lack of data although biomass combustion is very common in Tonga. There is a need to establish a GHG inventory management system that would facilitate the continuous collection and development of activity data for use in inventory calculations on a continuous basis.

In order to support the development of the inventory management system training and capacity-building is required to better understand the use and application of the IPCC Technical Guidelines (both 1996 Revised version and the 2006 versions as well as the IPCC Good Practice Guidance and Uncertainty Management and the IPCC Good Practice Guidance on Land Use, Land Use Change and Forests. Thus

more experts need to be trained in carrying out inventories in land use and forestry, waste, agriculture and industrial processes. The latter sector is quite challenging as most of the products used in Tonga are imported into the country. Some of the key issues, constraints, gaps and problems identified during the preparation of the second national communication are:

- a) That the availability of detailed fuel consumption data remains the biggest source of uncertainty in the emission estimates for the energy sector. There is relatively good data available for diesel and lubricants used for electricity generation, water and sewages and transport. However, the fuel consumption data for other activities is based largely on estimate and the past trends. For example, the emissions from “Manufacturing & Construction”, and “Commercial and Institutional” sectors, were based on the assumption that all gasoline sold in gas stations are used for road transportation and sea transportation. This is obviously not the case, but given the lack of more detailed data, it is considered the best available option;
- b) A significant source of uncertainty exists in the estimates for the data used for biomass fuel consumption. There is very little information available on the amount of biomass fuels used in Tonga. The data used for the second GHG inventory is based on estimates made for EPU’s National and Regional Energy database of the South Pacific Geoscience Commission;
- c) There is a general lack of accurate and reliable data for use in the inventory as a whole;
- d) There is an urgent need for inventory of the natural forest resources in order to have reliable baseline data. Urgent inventory is also needed on for different forest types; coastal/littoral forests; secondary forests, swamp forest, urban forests and trees, and tree crop plantations such as sandalwood and tree species for wood products (e.g. for carving artifacts);
- e) There is also lack of institutionalization of GHG inventory processes in the forestry sector,
- f) There is lack of systematic records for national fuel wood supply as biomass provides a major source of energy in Tonga;
- g) There is lack of appropriate capital resources to facilitate GHG inventory preparation and associated climate change studies, particularly in the areas of resource inventory and data collection, collation, archival and retrieval;
- h) There is lack of human resources to conduct GHG inventories on a continuous basis;
- i) There is lack of data and information with regards to solid waste, waste water and sludge. Prior to the year 2000, there have only been two studies on solid waste characterisation, composition and quantity in Tonga. There have been several detailed studies but these need to be updated, as well as to carry out studies to derive factors on BOD and COD for wastewater and sludge for Tonga. Several issues and/or concerns will need to be addressed to improve the understanding of waste management sector in Tonga:

- Need for development of database management system for inventory sectors including waste so that data is readily available for inventory preparation;
- Need to improve access to available data. For instance, some limited data (e.g. on waste , petroleum products) is available, but due to confidentiality, the data is often restricted;
- There is usually inadequate levels of funding and resources made available for GHG inventories;
- Sector-specific expertise is limited in Tonga to conduct inventories;
- Carbon dioxide emissions from waste burning at the landfill were not adequately covered in the inventory.

Tonga’s GHG inventory as presented in its SNC highlighted some of the most pertinent problems and constraints in the preparation of its TNC. One of the main issues relating to energy sector is the lack of accurate and reliable data. This would mean that emissions estimates may necessarily contain some

levels of uncertainty in the inventory. There is also very little information available on the amount of biomass fuel used in Tonga. Estimates of emissions and/or removals from LUCF are affected by inconsistencies in forest resource estimates, lack of national forest inventories, lack of statistics on national fuel wood supply, lack of database on forest resources and the fact that LUCF inventory is not part of the core business of government ministry such as agriculture and forests. In the waste sector, there is lack of information and data on solid waste, waste water and sludge. Some information was available and had been referenced elsewhere but these were not readily available. Other issues include These problems and constraints are:

- a) Difficulties in data collection and collation.
- b) Lack of knowledge or expertise and lack of studies in particular categories of GHG emissions.
- c) The lack of quality data and poor data management has been singled out as the most pressing.
- d) Lack of appropriate hardware and software for development and improvement of data management systems for the preparation of national communications, and,
- e) Large uncertainties still remain despite relatively good data sets are available for some fuel types (e.g. diesel and lubricants).
- f) Estimates from biomass combustion still remain problematic as very little information is readily available at present.
- g) In the LUCF sector specific activity data is not readily available making estimates of emissions and/or removals from this sector uncertain thus there is an urgent need for an inventory of the natural forest resources needed.
- h) Lack of data and information on solid waste, waste water and sludge and waste management systems. Available data is constrained by:
 - Improper or lack of filing/record keeping system
 - Limited data available, however, not accessible due to confidentiality
 - Lack of studies on relevant issues with regards to waste sector emissions
 - Limited financial, human and technological resources

Given the problems and constraints outlined above, it will be necessary to focus emissions estimates on those categories of emissions for which data are available and accessible and whose emissions provide a significant share to the total GHG emissions in Tonga. In this regard, a key source/category analysis will be undertaken to determine key source categories of emissions for the inventory work. Additionally, capacity building and training on the use and application of the methodologies and tools for conducting a national GHG inventory will continue to be conducted in order to train sufficient numbers of people to undertake the inventory work on a continuing basis.

VULNERABILITY AND ADAPTATION ASSESSMENT

In preparing its second national communication Tonga has used both bottom-up and top-down approaches in its V&A assessment work. While the results shown on the vulnerability of Tonga as a whole is credible there are still many deficiencies in better understanding the impacts of climate change on the various sectors that people depend on for their livelihood (e.g. agriculture, coastal resources, water resources, human health, and marine and terrestrial ecosystems). Thus one of the main issues that still need to be addressed is to better understand the impacts of climate change so that effective adaptation measures, policies and strategies can be developed to address the impacts.

The bottom up approaches to V&A assessment through consultations and participatory assessments reveal that Tonga (its people/communities) is already experiencing adverse impacts of climate change

and have developed capacities to cope or adapt to these changes. However, the question of whether or not adaptive capacity and adaptations will be sustainable in the longer term is not clear and there is no evidence-based information to support or link the adverse impacts to changes in rainfall, temperature and other climate phenomenon.

The other issue which still needs to be addressed is the relevance of use of global circulation models (GCMs) in projecting the future changes in temperature and rainfall and how these might affect (positively/negatively) biophysical and human systems in Tonga. The GCMs used to project future changes in temperature and rainfall use grid-cells of 500km x 500km which is considered very coarse in terms of resolution for any meaningful application in better understanding the impacts on the human systems (water, coasts, human health, agriculture, and ecosystems) in a small island state like Tonga. Hence it is imperative for Tonga to use high resolution GCMs to project future changes to temperature and rainfall. Thus sensitivity analysis carried out on the various sectors is limited by the coarse resolution of the GCM patterns used. The preparation of TNC provides an opportunity for Tonga to works towards developing a high resolution modeling of climate change impacts and adaptations in the various vulnerable sectors (coastal zones, agriculture, water resources, fisheries and marine resources, forests and biodiversity).

A number of new areas have been identified in the TNC on vulnerability and adaptation assessment:

- a) There is a need on all islands to assess available water resources adequately and to monitor their performance under current stresses (e.g. droughts, groundwater pumping) and possible additional stresses caused by climate change scenarios. Water resources assessment is a necessary first step before the likely impacts of various stresses on groundwater systems can be analysed.
- b) A sustained effort is required to obtain good quality data. Regular monitoring programmes by well trained staff are the ideal approach. National water agencies should be encouraged to maintain and, in many cases, expand water resources monitoring networks. Assistance from external aid donors may be necessary where local funding is inadequate to cover this important aspect. The following parameters are recommended to be monitored on a regular basis.
- c) A more comprehensive and reliable software package (such as HYDSYS) is needed to allow for more efficient entry, archiving, analysis and reporting. HYDSYS packages are capable of handling discrete and time series data and both can run on personal computers.
- d) Lack of baseline data for different island groups with respect to temperature and rainfall regime, the rate of soil organic matter decomposition and on the rate of GHG release as a result of mechanical tillage.
- e) There is still very little knowledge or awareness about climate change and sea level rise and the potential impacts on their livelihood. Rural village people do recognize various changes but they are not aware that these changes may be linked to climate change and variability.
- f) In order to monitor and identify changes caused by climate change on marine resources, there is a great need to keep tract of the pattern of various climatic variables in relation to changes in the environment and abundance, growth, reproduction, mortality, distribution, diversity and behaviour of marine species and habitats. This type of assessment require personnel that are well equipped with appropriate skills and experiences for this type of work and be able to carry out analysis and interpretation of results.
- g) Proper and accurate monitoring process always requires appropriate instruments and equipment which are always lacking in small island state like Tonga. Powerful and fast internet connection is required in order to access to various source of good information provided by various agencies through the internet. A lot of satellite images of various oceanographic variables required for

assessing and predicting the pattern of climate change and its potential impacts on marine resources can be obtained directly from various resources through internet.

- h) Computer skills in creating database for data collection and analysis with modeling potential is a relevant training area for those that have some understanding of climate change concept and marine biological science. This is enabled personnel to maintain the continuity of data collection, analysis and interpretation and make appropriate prediction of potential impacts of climate change on marine resources taking into consideration all climatic and non-climatic relating factors and variables to reduce the uncertainty of forecast.
- i) Develop a legal frame work and incorporate all climate change phenomenon to build sound sustainable development policy for marine sector.
- j) Limited knowledge and understanding of climate related health problems; e.g. effects of climate factors such as temperature, humidity etc. on the vectors is not known.
- k) Lack of meaningful engagement between Health Sector and other sectors like meteorological services, environment, etc, to collaborate on relevant data to determine relationships between climate change and its effects on the health of the Tongan people.

MITIGATION ASSESSMENT

The SNC Mitigation assessment was carried out by examining opportunities for GHG emission reduction informed by the results of the GHG inventory. However there were no mitigation baselines developed against which mitigation assessment could be conducted. Given the general lack of adequate data and the credibility of emissions estimates it would be necessary to conduct mitigation assessment in the energy sector given that current emissions estimates are dominated by fuel combustion. In this regard the preparation of the TNC could use the Long range Energy Alternatives Planning (LEAP) tool to develop baselines and mitigation scenarios. LEAP model would facilitate training and capacity-building, data collection, baseline/ mitigation scenarios and assessment of mitigation options.

RESEARCH AND SYSTEMATIC OBSERVATION

This component of the national communication is not fully developed although much of the research and observations on climate and climatic parameters are conducted by the Tonga Meteorological Services. While Tonga participates in some of the global observing systems it is still limited at the national level by inadequate coverage of its observation networks within the country. Concomitant capacity-building needs include the need to upgrade agrometeorology and to tailor seasonal climate outlook for human health, agriculture, water resources in Tonga. Additionally, training and capacity-building is required for personnel in forecasting and to upgrade existing meteorological stations. The biggest problem identified so far is that there is almost no winter signal during winter months which makes forecasts in the dry season problematic.

TECHNOLOGY TRANSFER

So far the technology needs assessment was not carried out for priority adaptation and mitigation technologies. Thus much of the information for adaptation and mitigation technologies was identified through conducting V&A and mitigation assessments. Technology needs assessment will be necessary to identify effective adaptation and mitigation technologies.

EDUCATION, TRAINING AND PUBLIC AWARENESS

Many activities relating to climate change education, training and public awareness activities have been incorporated into the implementation of the various components of the national communication during the preparation of the SNC. However, a stronger effort is needed to increase awareness of the impacts of climate change and efforts that are being carried out to address climate change in Tonga. It was noted that opportunity exists now to incorporate climate change issues into the curriculum of primary and teacher education as the curriculum is currently under review. As part of promoting and/or integrating climate change issues in the education sector (primary and teacher education) it would be important to engage or use students or student groups to work on climate change projects through “hands on experience.” This could be done through coastal rehabilitation and replanting and conducting fieldtrips to vulnerable areas. Stronger cooperation and collaboration between MECC and Ministry of Education is required to facilitate greater awareness and information exchange on climate change issues.

CAPACITY BUILDING

A high level of capacity exists in Tonga but few in numbers hence capacity-building for implementation of the various activities in the national communication needs to be strengthened and include as many people as possible. Some of the key capacity-building needs have been identified in the Tonga’s National Capacity Self Assessment in the areas relating to GHG inventory, V&A, and mitigation assessments. These needs will be incorporated in the TNC project proposal.

INFORMATION AND NETWORKING

As with other SIDS Tonga’s ability to generate and disseminate climate change information is influenced by availability of skilled personnel, information technology and the needs of the end users. In this context information dissemination and networking is often done through electronic mail through the Internet and the publication of brochures/pamphlets in both English and local vernacular. However the usefulness of this form of communication and networking is as good as the telecommunications technology at the national level. At the regional and international level Tonga is well connected to information and networks available in the region as well as at the international level. Thus, the TNC will focus on strengthening the information and networking at the national level and as a country characterized by many small islands such activity will be critical.

Tonga has already taken positive actions to implement the UNFCCC objectives but many gaps, constraints and problems still remain as outline above. The National Strategic Planning Framework has catalyzed drafting of policies relating to population, water resources, land-use and waste management, climate change and disaster risk management in addition to addressing health and climate change concerns.

Many of the issues and activities relating to the implementation of the UNFCCC and the preparation of national communication were carried out under the auspices of the national coordinating committee (NCC) which was mandated by the government to oversee the implementation of the UNFCCC.

The level of awareness on environmental issues is generally high among the various sections of the population and government but more needs to be done to integrate climate change issues and concerns in

the development planning and implementation. In recognition of this the government has developed JNAP⁴ to streamline its efforts in addressing climate change issues and disaster risk reduction efforts.

SYNERGY BETWEEN ENABLING ACTIVITIES AND OTHER PROJECTS

At the national level, the preparation of the TNC will have strong linkages to and build on a number of on-going and recently completed UNDP-GEF enabling activities such as Tonga's National Capacity Self-Assessment (NCSA) activities, National Biodiversity and Action Plan (NBSAP), National Sustainable Land Management Project (SLM) as well as with other UNDP-funded activities in the area of sustainable energy including the UNDP-GEF funded Pacific Islands Greenhouse Gas Abatement through Renewable Energy Project (PIGGAREP), Pacific Adaptation to Climate Change (PACC-Tonga) and the development of the National Climate Change Adaptation Strategies on Land based Resources (NCCAS)⁵. These projects are either nearing completion or have been completed already and will provide pertinent information on the various elements of the TNC.

Other similar programmes on adaptation, mitigation and financing of climate change in Tonga will also provide relevant information to the TNC process. Tonga has in recent times implemented a number of climate change adaptation and climate change-related programmes, projects and activities. The list below includes the most recent and ongoing projects:

International Climate Change Adaptation Initiative (ICCAI) delivered and implemented jointly by AusAID and the Australian Department of Climate Change and Energy Efficiency focuses on: improved scientific information and understanding; strategic planning and vulnerability assessments; implementing, financing and coordinating adaptation measures; and multilateral support for climate change adaptation.

As part of ICCAI Australia has provided \$40M to the *Pilot Programme on Climate Resilience (PPCR)* in which Tonga also participates. Under the PPCR, Tonga will have access to funding support of US\$15million to implement its *Strategic Programme on Climate Resilience (SPCR)*.

Pacific Australia Climate Change Science and Adaptation Planning Programme (PACCSAP) - Tonga also has access to funding and support through a number of regional programs including the Community-based Adaptation Activities, and the Pacific Future Climate Leaders Program.

- 1) *South Pacific Sea Level and Climate Monitoring Project* - This programme commenced in 1991 with the objective of installing eleven sea level monitoring stations across the Pacific Basin. All stations were operational by October 1994 with Tonga's station installed in January 1993. This project is ongoing with training and capacity building provided to Tongan experts.
- 2) Tonga is implementing a number of UNDP-GEF funded climate change adaptation and other climate change related projects.
 - *Second National Communication under the UNFCCC* (USD 405,000.00), 2008-2012.
 - *Pacific Adaptation on Climate Change* 2008-2013.
 - Various projects funded through the *Small Grants Programme on adaptation and mitigation*.
 - *Integrated Water Resource Management Project* to be completed 2008-2013.
 - *Third National Communication on Climate Change* (USD480, 000). Awaiting initial disbursement of funds from UNDP-GEF.

⁴ Tonga is the first country in Pacific to develop a Joint National Action Plan on CCA and DRM.

⁵ NCCAS is funded by German Technical Cooperation (GTZ) through a project titled Adaptation Climate change in the Pacific Islands Region (ACCPIR) for Fiji, Tonga and Vanuatu.

- 3) *Coping with Climate Change in the Pacific Island Region (CCCPIR)* – Programme funded by Government of Germany through The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) focussing on CC mainstreaming, implementing pilot activities, education and energy” 2009-2015.
- 4) *ADB – Supported activities in Tonga:*
 - Development of climate risk profile for Tonga as basis for climate change adaptation initiatives for various development sectors;
 - Mainstreaming of climate change adaptation and mitigation in the Country Partnership Strategy to ensure that climate change implications are incorporated in the economic development policies and planning processes;
 - Incorporation of climate change adaptation in Urban Integrated Development Project (Phase II).
- 5) *Renewable Energy Project and Mangrove Ecosystem for Climate Change and Livelihood Project* funded by Governments of Italy and Austria and supported by International Union for Conservation of Nature (IUCN).
- 6) *University of the South Pacific-EU Global Climate Change Alliance* project addresses the challenges of climate change impacts in the 15 Pacific ACP countries, including Tonga, through capacity building, community engagement, and applied research. The objective of this project is to develop and strengthen the Pacific ACP countries' capacity to adapt to the impacts of climate change. Overall available funding is 8m EUR.

Of particular note is the similarity in approaches that highlighted the immediate needs and concerns relating to adaptation, mitigation, climate change mainstreaming and climate change financing. Many adaptation projects in Tonga involve the same experts who will be working on aspects of the TNC and thus opportunities for integration of climate change across government, the private sector and non-government organizations will have been heightened greatly. Adaptation to climate change has very close linkages with activities relating to the preparation of the National Biodiversity Strategy (NBSAP) under CBD and National Action Plans under the UNCCD. Many of these activities relating to the preparation of vulnerability and adaptation assessments for national communication will therefore have closer links on JNAP and capacity building issues.

NEW AREAS OF WORK FOR THIRD NATIONAL COMMUNICATION

A number of areas have been identified which will form part of the programme for the preparation of the TNC. These areas are not necessarily new as they had been identified for inclusion in the SNC but were not addressed due to human capacity, technological and financial constraints. Every effort will be made, subject to availability of resources (human, technological, financial), to:

- a) Conduct a key/category source analysis in order to determine the sectors with significant emissions where resources can be targeted,
- b) Conduct training in the use and application of various models in vulnerability and adaptation assessments, the IPCC Good Practice Guidance on National Greenhouse Gas Inventories and Uncertainty Management, IPCC Good Practice Guidance on Land Use, Land Use Change and Forestry and related applications of geographic information systems and remote sensing techniques.
- c) Strengthen and/or populate existing and, where appropriate, establish data management systems to ensure preparation of good quality inventories and to enable vulnerability and adaptation assessments over the long term.

- d) Identify technology transfer issues relating to energy efficiency and energy conservation as well as opportunities for renewable energy sources and technologies.

PRIORITIES FOR TNC IDENTIFIED UNDER VARIOUS COMPONENTS

NATIONAL CIRCUMSTANCES

Information on national circumstances particularly on the physical geography, topography and general climate has not changed since the preparation of the second national communication. However a number of key strategic policy and planning frameworks have been prepared and adopted by the government will be analysed and reported. The analysis will include how these planning and policy frameworks will affect the way in which Tonga deals with climate change and sustainable development issues in the long term. The preparation of the Third National Communication will strengthen the linkages and facilitate better understanding of the nexus between planning for climate change and development. This will involve analyses of policies and plans that are currently being pursued and developed by Tonga and their relevance in dealing with climate change issues and concerns.

Coordination, cooperation and synergy between the key stakeholders in developing actions and strategies to cope with the impacts of climate change are crucial for achieving sustainable development outcomes. The preparation of the various components of the TNC will help further strengthen and where appropriate, build synergies among and between the various stakeholders. Since the preparation of the SNC, new institutional arrangements were set up to address climate change issues in Tonga consistent with the planning and policy frameworks that had been developed.

NATIONAL GREENHOUSE GAS INVENTORY

There had been no training conducted during the SNC process on data collection, analysis and archiving and on conducting key category analysis. Therefore under the TNC process, training and capacity building will focus on:

- Data collection, analysis, archiving and management, and
- Identification of key categories of emissions is considered important in determining resource allocations in GHG inventories and
- Training in the use of Revised IPCC guidelines on national greenhouse gas inventories, the IPCC good practice guidance on the National GHG inventories and Uncertainty Management and the IPCC Good Practice Guidance on Land use, land-use change and forestry.

STEPS TAKEN OR ENVISAGED TO IMPLEMENT THE CONVENTION

Measures to facilitate adequate adaptation

Much of previous work has focused on vulnerability and adaptation assessments, which identified a number of critical actions, and measures that could contribute to enhancing adaptive capacity and towards achieving adequate adaptation to climate change. The needs and concerns relating to vulnerability and adaptation outlined below have not been addressed due to human, technological and financial constraints:

- a) Continue with building human and institutional capacities to assess, plan and respond to climate-change related risks
- b) Strengthen networking and information sharing/exchange amongst all stakeholders to develop appropriate measures to address climate change, climate variability and sea-level rise.
- c) Conserve and protect breeding grounds and habitats and species that are considered vulnerable to impacts of natural disaster (tropical cyclones, flooding, droughts, etc) and human induced activities.
- d) Conduct studies on the impacts of ENSO on the fisheries and tourism sectors.
- e) Develop a climate change and climate variability database for all sectors and develop relevant indicators to monitor and evaluate their impacts,
- f) Develop and promote integrated coastal zone management and planning for the protection of coastal resources,
- g) Develop and manage databases necessary for vulnerability and adaptation assessment
- h) Develop high-resolution modeling of inundation of the coastlines characterized by high population density and various levels of exposure to effects of climate change and sea-level rise.

Significant gaps still exist in the areas of data collection, monitoring, expertise, skills and know-how required to conduct vulnerability and adaptation assessments on a continuous basis. Therefore, there is an urgent need to:

- a) Develop and use of appropriate methodologies and tools for conducting vulnerability and adaptation assessments of the marine sector.
- b) Conduct cost-benefit analysis, prioritization and costing of adaptation options, strategies and measures.
- c) Incorporate vulnerability and adaptation assessment work into development planning.
- d) Research, systematic observation and data collection, analysis and dissemination.
- e) Enhance the capacity of communities to identify capacity building and training needs as they relate to vulnerability and adaptation assessments, building on the community vulnerability and adaptation assessments currently being conducted in several communities.

Measures to mitigate climate change

As part of its overall development strategy, Tonga has developed Tonga Energy Roadmap (TERM) that reflects its future development trajectory. In this regard efforts are being made to promote energy efficiency and conservation as well as the use of renewable energy sources and technologies. Energy is a fundamental building block for Tonga in its social and economic development and in enhancing the livelihoods of all Tongans. Tonga is highly dependent on imported fuels for its energy requirements. In 2000 when the last energy balance was compiled imported petroleum products accounted for about 75% of Tonga's total energy needs. Currently all grid-connected or supplied electricity (98%) is generated using imported diesel fuel.

Training and capacity building is required in the use of appropriate technologies, methodologies and tools for assessment of mitigations options and development of mitigation scenarios particularly in sectors with significant mitigation potential. In this case a user-friendly tool such as Long-range Energy Alternatives Planning (LEAP) system will be used to develop baselines against which mitigation scenarios will be evaluated.

OTHER INFORMATION CONSIDERED RELEVANT FOR THE ACHIEVEMENT OF THE OBJECTIVES OF THE CONVENTION

Technology transfer

SNC preparation did not include technology needs assessment to identify the barriers and ways to promote renewable energy technologies for renewable energy development and also for effective adaptation technologies. Thus TNA will be carried out in the TNC. The assessment will include capacity building needs, enabling environment, technology information and mechanisms for the transfer of technology.

Research and systematic observation

Continued efforts to strengthen the capabilities and expertise of Tonga to contribute to and participate in research and systematic observation, data collection and processing, archiving, analysis and dissemination is considered critical in providing climate services and in dealing with climate change issues. However this component of the SNC was not fully developed although much of climate change research and observations are conducted by the Tonga Meteorological Service. The ability of Tonga Meteorological Services to provide critical climate change information is affected by limited coverage of its observation networks within the country exacerbated by concomitant capacity-building needs which include the need to upgrade agrometeorology and to tailor seasonal outlook/forecasts for human health, agriculture, and water resources in Tonga. There is also a need to enhance the capacity of the institutions and personnel responsible for Tonga's contribution to and participation in the global climate observing system and other global observation systems including training of personnel in forecasting and upgrading of existing meteorological stations.

Capacity-building

Capacity-building is regarded as a key issue in all areas of work relating to the preparation of national communication. It is therefore important that sufficient resources are provided for this activity on an on-going basis so that activities/tasks required are implemented in an effective and sustainable manner. Opportunities already exist for collaboration and synergy between the various Convention processes as they relate to capacity building and technology transfer and therefore it is important to ensure these are further strengthened.

Education, training and public awareness

In respect of education, training and public awareness Tonga is in the process of incorporating climate change issues within the education curriculum⁶. Such efforts are highly commendable and will need resources (human and financial) to continue this work as the priorities and needs for climate change science evolve.

There is a need to continue and improve the efforts in training and awareness-raising on climate change issues at the community and national level. Existing networking and information exchange between the various levels of society will need to be strengthened and where relevant new networks and information exchange mechanisms should be explored. Experience from the preparation of the SNC indicated that

⁶ Tonga is currently reviewing its Primary and Teacher Education curriculum to include the science of climate change as an entry point for integrating climate change science into the curricula.

education; training and public awareness on climate change and its adverse effects needs to be carried out on a continuing basis.

Needs and constraints, and related financial, technical and capacity gaps

Great efforts are being made to fulfill and overcome some of the needs and constraints relating to financial, technical and capacity gaps with the assistance of bilateral and multilateral organizations. However, there are many more needs and constraints that are being identified and for which no or very limited resources are available to help address these evolving issues and priorities. Therefore it is recommended that resources (human, technical and financial) made available should be commensurate with the evolving priority needs and concerns.

C. MAIN LESSONS LEARNED FROM THE SELF-ASSESSMENT EXERCISE

LINKAGE WITH THIRD NATIONAL COMMUNICATION

A number of lessons learned from the previous work relating to the preparation of the SNC and on-going work currently being carried out under various programmes, projects and activities include the following:

- a) Strong institutional arrangement is critical in the management of the projects and their implementation. This has been achieved through a country-team approach (e.g. NECC and TWG) but will need to be strengthened and expanded to include other stakeholders who have concerns about climate change and its effects,
- b) There exists some level of clarity over roles and responsibilities of various ministries, agencies and institutions with respect to climate change and which will need to be strengthened,
- c) Improving and strengthening in-country capacity will be critical component of the implementation of this project,
- d) The level of collaboration and cooperation between and among the various agencies, institutions of government and non-government organizations and communities in the implementation of projects is high in Tonga but is only focused on the main government agencies and some key non-government organisations. Experience from SNC process indicates that further linkages will be necessary with vulnerable groups and community-based organisations to facilitate effective implementation of the various components of the TNC.
- e) Capacity building and training is necessary for all activities relating to the preparation of national communication. Capacity building will include skills upgrading and outsourcing experts and institutions to carry out the tasks/activities in a timely manner.
- f) Tonga has made good progress under its public service reform programme particularly in promoting the reforestation and agroforestry leading to the development of the National Forest Policy, the establishment of the Land Use Commission and a Ministry of Environment and Climate Change which will oversee and coordinate the implementation of the TNC preparation. However, the challenge now is to seek to integrate climate change issues and concerns into the sectoral planning and development. A number of key government ministries and non-government organizations will play a key role in the preparation of the TNC. All of these organisations have been consulted and have participated in the preparation of the INC and SNC so they will continue to be involved in the preparation of the TNC:
 - Ministry of Environment and Climate Change
 - Ministry of Lands, Survey and Natural Resources,

- Ministry of Agriculture, Food, Forestry and Fisheries
- Ministry of Foreign Affairs,
- Ministry of Health
- Ministry of Transport and Civil Aviation
- Ministry of Works
- Ministry of Finance and Planning (AID Management)
- Ministry of Tourism
- Tonga Water Board
- Tonga Trust
- Tonga Association of Non-Government Organizations (TANGO)
- Civil Society Forum

SYNERGY WITH RELEVANT INITIATIVES

The preparation of the initial and Second National Communications process represents a very good example on how various ministries, agencies, institutions of government and non-government organizations work together in a collaborative manner towards developing a national communication. Thus the approach used in the SNC development is similar to what is being proposed for the TNC preparation.

The TNC preparation (particularly the adaptation component) will be based on the outcomes of the JNAP which was based on multi-stakeholder consultations, and which has identified a number of important sectors of the economy and livelihoods that would be adversely affected, by climate change, climate variability and sea-level rise. Moreover, adaptation and capacity building are key cross-cutting issues that would promote synergy between and among the UNFCCC, CBD and the UNCCD. Activities relating to the preparation of vulnerability and adaptation assessments for the TNC will therefore have closer links on adaptation and capacity building issues with other reporting requirements.

As with the preparation of SNC it is envisaged that the TNC preparation in Tonga will make use of existing agencies of the Council of Regional Organizations of the Pacific (CROP)⁷ to provide technical advice and support (expertise, skills and know-how), where appropriate, and where necessary, use national, regional and international experts to assist in carrying out some of the activities relating to the national communication; training and capacity building institutes on various elements of the national communication. Given that prioritization of adaptation options was not conducted in the SNC it will be necessary to engage relevant regional and international experts to facilitate the prioritization and evaluation of adaptation actions/activities, and implementation of adaptation options, strategies and measures.

D. STAKEHOLDER CONSULTATIONS

As a party to the UNFCCC and its obligation to prepare a national communication the Government of Tonga is fully committed to the implementation of the UNFCCC, and hence the goals and objectives of this project. Thus the project management structure is designed to fully engage participation by local experts in all aspects of activities so that further activities in the future are sustainable. Stakeholder participation in certain aspects of the project activities will be encouraged where appropriate and possible. This will include conducting community level assessments of vulnerability and identification

⁷ Secretariat of the Pacific Environment Programme (SPREP), Secretariat of the Pacific Community (SPC) and, the University of the South Pacific (USP)

and prioritization of adaptation options, strategies and measures as outlined in the Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management. The outreach activities to be undertaken in the TNC Project's Component 7 would also need the extensive support of not only the relevant ministries but also local communities, NGOs and Civil Society Organizations such as Tonga Trust and TANGO in order for the activities to be effective and successful. Local communities, NGOs and the media will be invited to participate in all national workshops as appropriate.

On the completion of the TNC preparation, it is expected that a high level of institutional and technical capacity of the country would have been strengthened considerably to enable Tonga to better respond to the challenges and opportunities presented by climate change as well as to better fulfill its commitments under the UNFCCC.

STAKEHOLDERS AND INSTITUTIONS CONSULTED

Institution	Stakeholders interests/responsibilities	Relevance to climate change/reasons for inclusion	Role in the self-assessment process
GOVERNMENTAL INSTITUTIONS			
MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE	Operational focal point of the UNFCCC and the GEF. Responsibilities: <ul style="list-style-type: none"> - Manages donor-funded programmes and the multilateral environmental agreements. - Implementation of the Climate Change Convention 	Climate Change Section, established within DOE. Secretariat to National Environment Coordinating Committee. Responsible for preparation of the INC and SNC and its submission to the CoP Responsible for NCSA preparation in collaboration with other relevant agencies Responsible for coordinating and facilitating the development national climate change policy and the JNAP	Regular consultations with the UNFCCC focal point for discussion of the proposal of the SNC in terms of technical issues, opportunities for synergy among various projects and institutional arrangements. Consultation on the provision of climate data and information as well as on the needs for capacity-building, training and research (collection, analysis and archiving) and dissemination of information Consultations on issues relating to technologies data and information for research and systematic observations (contribution and participation in global research and observing Identification of the evolving needs and priorities for climate change in Tonga
MINISTRY OF LANDS, SURVEY AND NATURAL RESOURCES	Responsible for land management and all matters relating to land, natural resources and environment	Member of the Technical Working Group on Climate Change	Consultations on national priorities, mainstreaming of climate change in national environmental strategies, programmes and other documents, as well as on current and planned projects. Consultations on the availability of digital data (elevation data), maps and geographic information systems such as in identification of vulnerable areas of Tonga
MINISTRY OF AGRICULTURE, FORESTRY AND FOOD AND FISHERIES	Responsible for the provision of high quality and timely service through competent and motivated staff, to enable clients to improve productivity, market access and profits, while sustaining the environment and agricultural (food) security; and to	Member of the TWG Assist agriculture and forest sectors on agroforestry and reforestations programmes	Consultations on the provision of data and information on land use and forestry. Consultations on adaptation technologies in agriculture, forestry and fisheries.

Institution	Stakeholders interests/responsibilities	Relevance to climate change/reasons for inclusion	Role in the self-assessment process
	account for the use of resources in the delivery of services that are conducive to improved agriculture and forestry sector performance, and increased export revenues.		<p>Consultations on the adverse impacts of climate change and sea-level rise on food production, food security and fisheries.</p> <p>Consultations on the provision of data and fishing practices and the need for assessing impacts of climate change on fisheries resources</p>
MINISTRY OF HEALTH	<p>Responsible for surveillance and early warning for vector-borne and water-borne diseases</p> <p>The relationship between climate change (rainfall and temperature) and the incidence of vector-borne and water-borne diseases</p>	<p>Member of the TWG</p> <p>Has collaborated with MECC on public awareness on the effects of climate variability and extremes as well as community vulnerability and adaptation assessments.</p>	<p>Consultations on information and data on the health effects of changes in rainfall and temperature</p> <p>Provision of health statistics relating to climate-related stresses (diseases).</p> <p>Consultations on the impacts of climate change on incidence of vector-borne diseases and on human comfort</p>
MINISTRY OF FINANCE AND PLANNING	Responsible for integrating climate change issues and concerns into national planning processes	<p>Member of TWG</p> <p>Developed a JNAP in collaboration with MECC and other stakeholders</p>	<p>Consultations on the progress made on the integration of climate change into planning processes and the development of the National Strategic Planning Framework.</p> <p>Consultations on the role of AID management in financing externally funded projects, programmes and activities relating to climate change and sea-level rise.</p>
MINISTRY OF EDUCATION	Responsible for education curriculum development which includes subjects relating to climate change, climate variability and sea-level rise.	Member of TWG	<p>Consultations on the process of incorporating climate change issues into the education curriculum an efforts to include climate change issues in training and public awareness programmes.</p> <p>Consultations on the incorporation of science of climate change in the primary and teacher education curricula.</p>
MINISTRY OF FOREIGN AFFAIRS	Responsible for the Kingdom's foreign policy and foreign relations, including its dealings with the multilateral environmental agreements	Member of the TWG	Consultations on the implementation of the UNFCCC and the preparation of the second national communications and other commitments under the UNFCCC
MINISTRY OF TRANSPORT	Responsible for Transport and Tonga Meteorological Services	Member of the TWG	Consultations on the need for provision of data and information as it relates to V&A assessment, research and systematic observations and technology transfer issues.

Institution	Stakeholders interests/responsibilities	Relevance to climate change/reasons for inclusion	Role in the self-assessment process
			<p>Consultations on modeling of climate change.</p> <p>Consultations on adaptation and mitigation of climate change opportunities.</p>
TONGA WATER BOARD	Responsible for water resources use, management and control	Member of the TWG	Consultations on the V&A issues relating to the quality and quantity of water resources in the Kingdom
MINISTRY OF LABOUR, COMMERCE AND INDUSTRY	Responsible for labour/employment, commercial activities and industrial development	New Member of TWG	Consultations on understanding of climate change impacts and incorporation of CC into commerce and industrial development.
MINISTRY OF TOURSIM	Responsible for development of tourism	New member of the TWG	Consultations on the activities relating to impacts of climate change on tourism and its effect on tourism development.
MINISTRY OF WORKS (also responsible for National Emergency Management Office)	Responsible for all public works and infrastructure development and disaster relief activities	Member of TWG	<p>Consultations on the need for data on public works on infrastructure development in vulnerable areas and on matters relating to disaster reduction, prevention and rehabilitation.</p> <p>Consultations on Disaster Risk Management and reduction efforts.</p>
Non-Government Organizations/Civil Society Organisations			
TONGA ASSOCIATION OF NON-GOVERNMENT ORGANIZATIONS	Responsible for education and development through theatre particularly on health, good governance, human rights and the environment	Member of the TWG	Consultations on further collaboration with MECC on community vulnerability and adaptation assessment and other awareness activities
TONGA CHAMBER OF COMMERCE	Responsible for the welfare of and advisory services to the private sector	New Member of TWG	Consultations on awareness and understanding of the climate change impacts on private sector/business clients

APPENDIX B: TECHNICAL COMPONENTS OF THE PROJECT PROPOSAL

1. BACKGROUND/CONTEXT

Tonga is seeking to prepare and submit its Third National Communications (TNC) to the UNFCCC Consistent with the UNFCCC guidelines for the preparation of national communications from non-Annex I Parties (decision 17/CP.8). The activities within the TNC will be a continuation of, and an improvement of the work done under the SNC.

2. PROJECT OBJECTIVES

The project aims to further strengthen the technical and institutional capacity of Tonga to prepare and submit its Third National Communication to the UNFCCC thereby meeting its obligations under Article 12, paragraph 1, of the Convention.

3. PROJECT STRATEGY

Please refer to Section 1.2, page 5.

4. PROJECT ACTIVITIES

4.1. NATIONAL CIRCUMSTANCES

Information provided on national circumstances is critical for understanding Tonga's vulnerability to the adverse effects of climate change, its capacity and its options for adaptation, as well as its options for addressing its GHG emissions within the broader context of sustainable development.

Information on national circumstances will include the analyses of national and or regional development priorities and objectives that Tonga is pursuing and those that would serve as the basis for addressing climate change and sea-level rise issues such as those outlined in the JNAP. Information on national circumstances will be linked to information provided in other chapters of the national communication. The analyses of development priorities and objectives should be of interest to other national stakeholders investigating the benefits of specific activities and policies and the linkages between the activities and policies relating to climate change and those of other Conventions, such as the CBD and the UNCCD.

Information will include:

- An update on geographical characteristics, including climate, forests, land use and other environmental characteristics,
- An update on population: growth rates, distribution, density and other vital statistics;
- An update on the economy, including energy, transport, industry, tourism, agriculture, fisheries, waste, health and services sector,
- Any new policies and/or plans and programmes on climate change developed (and/or are being prepared) since the preparation of the SNC.
- Education, including scientific and technical research institutions including levels of achievement,

- An update on the institutional arrangements relevant to the preparation of the national communications on a continuous basis including distribution of responsibilities within government departments, research institutions, NGOs and communities, etc.
- The role of the Ministry of Environment and Climate Change and its role as a relevant coordinating ministry responsible for climate change issues in Tonga.
- Involvement and participation of additional or other stakeholders (other than those identified in the proposal);
- Roles and responsibilities of the National Environmental Coordinating Committee (NECC) and the Thematic Working Groups on GHG inventory, vulnerability and adaptation assessment, mitigation, etc as well as their working arrangements including issues, concerns, constraints and difficulties encountered by such groups.

4.2. GREENHOUSE GAS INVENTORY

As a critical component of a national communication, the preparation of a high quality national GHG inventory will be necessary for understanding the growth of emissions of GHGs in Tonga and the performance of its economic and environmental policies. The GHG inventory will also be necessary for understanding the various climate change mitigation measures especially in the land use change and forestry sector. The latter activity will be closely aligned with the newly developed and adopted National Forest Policy 2010 for developing potential carbon offset programmes and projects.

Tonga's second GHG inventory highlighted some of the most pertinent problems and constraints in the preparation of its second national communication. The TNC will continue to focus on improving:

- Activity data from the various categories of GHG emissions and/or removals
- Activity data from land use change and forestry sector
- GHG database (collection, collation, archiving, storing and retrieval) for the preparation of national communication necessary in fulfilling its obligations under the UNFCCC.

Proposed Activities

On the basis of the first two inventories of Tonga⁸, national GHG Inventory for direct greenhouse gases such as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) and for indirect greenhouse gases carbon monoxide (CO), nitrogen oxides (NO_x) and non-methane organic volatile compounds (NMVOC) will be undertaken for the year 2000 or for the year of the last inventory and for any number of years up to the most recent year where data is available in five source categories: energy, industrial processes, agriculture, land-use change and forestry and waste, using the IPCC 1996 Revised Guidelines for National Greenhouse Gas Inventories. The year 2000 is used as a first year of inventory as is required by the UNFCCC guidelines and will also include inventories for years post-2000 up to the most current year where data is available.

A key-source analysis will be carried out to determine the sectors with significant emissions where resources can be targeted. This activity was not carried out under the SNC therefore it will include training in and capacity building on the use and application of the IPCC 1996 Revised Guidelines for National Greenhouse Gas Inventories, the IPCC Good Practice Guidance on National Greenhouse Gas Inventories and Uncertainty Management, and the IPCC Good Practice Guidance on Land Use,

⁸ The first two inventories were included in the initial and second national communications.

Land Use Change and Forestry and related applications of geographic information systems and remote sensing techniques. The training may also focus on the use the IPCC 2006 Guidelines for National Greenhouse Gas Inventories which was adopted after the UNFCCC guidelines were adopted for use by non-Annex I Parties in 2002.

Current inventory data management system in Tonga is not conducive to ensuring the preparation of high quality inventory over the long term. Therefore the inventory data management system will be required for all source categories to ensure Tonga is producing high quality and credible inventory estimates on a continuous basis.

Additionally emissions of methane and nitrous oxide from international bunkers and aviation will continue to be estimated for the year 2000 and any number of years up to the most current year.

The activity data of hydro fluorocarbons (HFCs), per fluorocarbons (PFCs), and sulfur hexafluoride (SF₆) has not been developed and which may require further training and capacity building to identify the possible sources to be included in the emissions estimates.

Quality assurance and quality control (QA/QC) procedures based on the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories will be applied as appropriate to ensure that the results of the inventory will be as reliable and/or credible as possible. This activity was not conducted during the SNC due to lack of capacity and therefore will require a focused training of national experts on how this can be carried out.

Tables 1 and 2, as provided by the UNFCCC guidelines (annex to decision 17/CP.8) will be used for reporting the national GHG inventory. The use of the UNFCCC GHG Software will facilitate the completion of the tables.

As with most climate change programmes, projects and activities a national workshop will be held to review the results. The workshop will involve policy makers so as to enhance their awareness on the importance of GHG inventory, national inventory management system and on a long-term programme for the improvement of future GHG inventories.

The membership of the Thematic Working Group (TWG) on GHG Inventory will be increased to allow for several experts to be trained in inventory work from the various sectors (sources) so that they will be able to carry out the inventory work effectively. Training on the application of relevant IPCC methodology, data collection, analysis and management, including the use of IPCC Good Practice Guidance and Uncertainty Management in National GHG Inventories will be conducted for the TWG.

Major Outputs and Indicators

The major outputs of the GHG inventory will be:

- Use of expanded Thematic Working Group on GHG inventory;
- Updated, improved and credible inventory data for CO₂, N₂O, CH₄, CO, NO_x, NMVoC, and data on HFCs, PFCs and SF₆ for the year 2000 and any number of years up to the most current year where data is available;

- An updated, improved and user-friendly GHG inventory management system including database for all source categories;
- A most up-to-date GHG inventory report;
- A pool of trained and skilled GHG experts representing each of the source categories;
- Identification of ways and means overcoming the gaps of the IPCC Guidelines in relation to the local conditions;
- Further information on any research pertaining to improvement of GHG inventory (e.g. use of the IPCC Emission Factor Database and other similar studies where available);
- Identification of gaps, constraints and difficulties and potential ways to address them to improve future inventories (including possible revisions to the existing IPCC GHG inventory methodology);
- Strengthened human, scientific, technical and institutional capacity to undertake a GHG inventory on a continuous basis;
- Improved understanding and awareness of policy makers of the GHG inventory and its management system for Tonga.
- Increased awareness of the general public of the critical importance of the GHG inventory through outreach activities including a National Review Workshop.

4.3. PROGRAMMES CONTAINING MEASURES TO FACILITATE ADEQUATE ADAPTATION TO CLIMATE CHANGE

Vulnerability and adaptation assessment for the preparation of the SNC provides pertinent information for the preparation of TNC, including, *inter alia*:

- a) About 70% of Tonga's population and infrastructure are located in the coastal areas/zones, rendering them highly vulnerable to climate change and sea-level rise. Their vulnerability is exacerbated by their exposure to extreme events, such as tropical cyclones and associated storm surge, coastal flooding, erosion, inundation and land loss.
- b) Tonga is also highly susceptible to extreme climate events, such as, prolonged droughts associated with the ENSO events, coral bleaching and intense tropical cyclones which can cause severe damage to socio-economic activities and infrastructure, agriculture and biodiversity
- c) Most vulnerable sectors include coastal zone, water resources, agriculture, forestry, marine/fisheries and human health, which are considered vital to the welfare and livelihoods of communities.
- d) There is a need on all islands to assess available water resources adequately and to monitor their performance under current stresses (e.g. droughts, groundwater pumping) and possible additional stresses caused by climate change scenarios. Water resources assessment is a necessary first step before the likely impacts of various stresses on groundwater systems can be analysed. A more comprehensive and reliable software package (such as HYDSYS) is needed to allow for more efficient data entry, archiving, analysis and reporting on water resources.
- e) Lack of baseline data for different island groups with respect to temperature and rainfall, the rate of soil organic matter decomposition and on the rate of GHG release as a result of mechanical tillage.
- f) There is still very little knowledge or awareness about climate change and sea level rise and the potential impacts on their livelihood. The SNC process has facilitated the increase in awareness and understanding of the impacts of climate change and sea-level rise but this effort will have to

be increased for all islands and vulnerable groups so they are better prepared to cope with adverse impacts of climate change. Rural village people do recognize various changes in nature but are not aware of their linkages to climate change.

- g) There is a greater need to keep track of the pattern of various climatic variables in relation to changes in the environment and abundance, growth, reproduction, mortality, distribution, diversity and behaviour of marine species and habitats. This is critical for supply of Tonga's protein needs (health and nutrition) and for further growth of tourism focusing on natural environment.
- h) Lack of capacities to develop and maintain sufficient database for climate change (data collection, analysis, interpretation and modeling).
- i) Limited knowledge and understanding of climate related health problems; e.g. effects of climatic factors such as temperature, humidity, and others the disease vectors and how they impact on health status and services is not fully appreciated.

Proposed Activities

Based on previous work and SNC, an integrated vulnerability assessment will be undertaken for key socio-economic sectors, such as settlements and infrastructure, biodiversity, and tourism. While the assessment work will focus on the latter sectors, an update of the vulnerability and adaptation assessment will also be focused on those sectors that were assessed in the SNC process to improve the understanding of the long term effects on the country as a whole.

Relevant global and/or regional circulation models may be used to construct climate change scenarios for the region that includes Tonga. Where possible, integrated assessment modeling will be used to assess the impacts of climate change in Tonga such as the Simple climate Change Model SIMClim (<http://www.climsystems.com/>) with updated climate information from Tonga (rainfall, temperature, sea-level rise, ocean acidification, etc) . The GCM outputs provided by the Pacific Science Programme, International Climate Change Adaptation Initiative of the Government of Australia (<http://www.pacificclimatechangescience.org>) will be used in integrated assessments to assess adverse effects of climate change on the various human systems. The GCM patterns (outputs) used in the SNC were of coarse resolution and not Tonga-specific so the high resolution GCM patterns produced by PCCSP will be used in the TNC.

Some of the activities relating to adaptation actions from the JNAP will be conducted through the preparation of the V&A assessment. In particular the actions relating to promotion of awareness-raising will be conducted through the implementation of the component on "Education, Training and Public Awareness." The awareness activities will be targeted at the policy makers and several identified target groups including local communities and islands. Focus group meetings with various stakeholder groups will be supplemented by a review national workshop. The national workshop will include key policy makers and other stakeholders so as to enhance their awareness on the various adaptation options, strategies and measures which should be taken into consideration in national development planning and for their implementation.

The expanded thematic working group on vulnerability and adaptation will undertake the above tasks, using methodologies that are considered better at reflecting the national situation, as well as existing methodologies and guidelines such as the *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations* (Carter et al., 1994); *UNEP Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies* (Feenstra et al., 1998); *International Handbook on Vulnerability and Adaptation Assessments* (Benioff et al., 1996); *Developing Socio-*

Economic Scenarios for Vulnerability and Adaptation Assessments; MAGICC/SCENGEN Climate Scenario Generator: Version 2.4, Technical Manual (Wigley et al., 2000); Compendium of Decision Tools to Evaluate Strategies for Adaptation to Climate Change (www.unfccc.int/issues/meth_tools.html), the Adaptation Policy Framework (UNDP, 2004) and other regional methodologies, where appropriate, will be used to undertake the assessment. These methods have been outlined in the: Guidelines for the preparation of national communications from non-Annex I Parties (decision 17/CP.8). Other methods to be used will include community vulnerability and adaptation assessment methodologies such as that used for development of JNAP and the National Climate Change Adaptation Strategies for Land-Based Resources supported by the German Technical Cooperation (GTZ).

Major Outputs and Indicators

The major outputs will be:

- A well trained and skilled team of national experts to conduct the V&A assessment on a continuous basis
- Strengthened and/or trained human, scientific, technical and institutional capabilities and capacities to undertake vulnerability and adaptation assessments;
- A wide range of stakeholders involved in the preparation of vulnerability and adaptation assessments including the involvement and participation of communities in the assessment work;
- Heightened awareness and visibility of the risks posed by climate change, variability and sea-level rise on the biophysical and human systems;
- Identification and development of effective⁹ adaptation options, strategies and measures;
- An improved, and/or better understanding of the key vulnerabilities and the risks posed by climate change, climate variability and sea-level rise on various sectors, communities and infrastructure;
- Improved V&A-specific data management system
- An analysis (i.e., cost-benefit analyses, evaluation and prioritization) of the various adaptation options, strategies and measures for key/priority socio-economic sectors based on established methodologies, including possible least-cost adaptation options and adaptation technologies;
- Better and improved understanding on climate variability, climate change, tropical cyclones, drought and precipitation trends and their relation with El Niño-Southern Oscillation (ENSO);
- Identification of policy options, including those that are being planned for adequate adaptation and response strategies for climate change impacts on key socio-economic sectors;
- An improved understanding of the coastal processes and its response to atmosphere-ocean interactions, e.g. through high resolution inundation modeling in high risk coastal areas;
- An improved mechanism for integrating climate change and sea-level rise issues into national planning and budgetary processes.
- Further activities, gaps, constraints and research needs, as well as specific financial, technical and institutional and research needs for capacity-building will be identified and highlighted;

4.4. PROGRAMMES CONTAINING MEASURES TO MITIGATE CLIMATE CHANGE

⁹ “Effective” here refers to actions/options that are “economically feasible, culturally acceptable and environmentally friendly.”

The GHG inventory of Tonga in its SNC indicates that energy sector is a fundamental building block for Tonga in its social and economic development and in enhancing the livelihoods of all Tongans and is well subscribed by all businesses and every household. The ingredient of the energy sector is highly dependent on imported fuels to meet its overall energy requirements. In 2000 when the last energy balance for Tonga was compiled, imported petroleum products accounted for about 75% of Tonga's total energy needs. Currently, all grid supplied electricity, which accounts for over 98% of electricity used in Tonga, is generated using imported diesel fuel. Over 95% of Tongans are connected to grid-based supply of electricity.

Tonga's total fuel imports account for about 25% of all imports and about 10% of GDP. Hence changes in the price and amount of petroleum imports have a significant impact on Tonga's balance of payments situation and inflation. In particular, sudden price shocks can be difficult to absorb. Electricity generation accounts for about one third of total petroleum imported. The oil price spike of 2008 led to the highest electricity tariffs Tonga has ever seen, with electricity prices peaking at over TOP1.00 per kWh (approximately 50USc/kWh). This had a significant negative impact on economic activity and on the quality of life for all Tongans. The experience highlighted the risk to Tongan electricity consumers and the economy as a whole of the combination of 100% dependency on imported petroleum for grid-based electricity generation together with essentially spot market pricing of all imported petroleum.

Given the foregoing background, in 2009, the Government and Development Partners embarked on a process to undertake a sector-wide review and develop an approach to improving the performance of the energy sector and to mitigating the risks. The resulting document entitled the "*Tonga Energy Road Map 2010-2020: Ten Year Road Map to Reduce Tonga's Vulnerability to Oil Price shocks and Achieve an Increase in Quality Access to Modern Energy Services in an Environmentally Sustainable Manner*" or "Tonga Energy Roadmap (TERM)" addresses improvements in petroleum supply chain and consideration of price hedging instruments, increased efficiency both in electricity supply and use, development of grid-connected domestic renewable energy resources, improved access to quality electricity services in remote areas, reduced environmental impacts both locally and globally, enhanced energy security, and overall sector financial viability. The scope includes policy, legal, regulatory and institutional aspects of the sector as well as investment.

Proposed Activities

In order for Tonga to undertake mitigation assessment as part of its development strategy, the Thematic Group on Mitigation, including *inter alia*, will carry out a number of pertinent activities:

- Collection, collation, analysis and archiving of data for energy and other sectors of the economy, where appropriate and relevant;
- Training and capacity building for national experts and institutions to undertake the preparation of the mitigation assessment;
- Training of personnel in the use of methods, models and tools for the generation of climate and socioeconomic scenarios, at both the national and sectoral levels; and,
- Preparation of mitigation projects for funding.

Training and capacity building will be required in the use of appropriate technologies, methodologies and tools for assessment of mitigations options and development of mitigation scenarios particularly in sectors with significant mitigation potential.

Initial analysis of the available models for mitigation assessment indicated that many are not suitable or appropriate for Tonga given the limited and inadequate relevant data particularly in the use of such technical resources as *Technologies, Policies and Measures for Mitigating Climate Change* (IPCC Technical Paper I); *Greenhouse Gas Mitigation Assessment: A Guidebook by the U.S. Country Studies Program* and *Climate Change 2001: Mitigation* (Contribution of Working Group III to the Fourth Assessment Report of the IPCC). However given the dominance of the energy sector (including transport) in terms of emissions in Tonga as shown by SNC inventory a LEAP model which uses a energy accounting framework will be used to generate baseline(s) against which mitigation analysis will be conducted.

A training workshop will be conducted to train and up skill national experts in using the LEAP model for mitigation assessment focusing on developing baseline(s) that takes account of the (i) likely development of activities that affect GHG sources and/or sinks in the energy sector by analysing business-as-usual case with continuation of current trends and the most likely case where markets and institutions are not assumed to behave perfectly; i.e. “no regrets” mitigation options and (ii) developing mitigation scenarios involving emission reduction targets relative to the baseline and creating options for GHG mitigation potential in the energy sector. This analysis will also cover the effects of and/or implications for Tonga Energy Road Map.

A national workshop will be held to review the outcomes of the mitigation assessment. Policy makers and other stakeholders will be invited to participate in the workshop, so as to enhance their awareness on the importance of GHG emission reduction, which should be taken into consideration in national development planning.

Major Outputs and Indicators

The major outputs will be:

- A plausible baseline for mitigation in the energy sector identified;
- Identification of national mitigation strategies/measures for the energy sector
- A pool of national experts trained and up skilled in the use and application of LEAP model for mitigation assessment and changes in land use and forestry;
- Strengthened human, scientific, technical and institutional capacity for mitigation assessment;
- A pool of experts (from forestry sector) to using forest and land use changes for off-setting emissions;
- Further constraints and specific financial, technical and institutional needs for capacity-building on mitigation and renewable energy technologies and on the development of mitigation measures and strategies will be identified and highlighted;
- Input and policy interventions for future review of the national energy policy and the TERM,
- Increased awareness and visibility of mitigation in off-setting carbon emissions

4.5. OTHER INFORMATION CONSIDERED RELEVANT TO THE ACHIEVEMENT OF THE OBJECTIVE OF THE CONVENTION

4.5.1 Development and transfer of technologies

The SNC process did not conduct the technology needs assessment although much of the discourse on technologies relating to mitigation and adaptation were carried out in the context of the V&A assessment and needs for mitigation due to lack capacity, financial and technical resources. Thus, the a technology needs assessment (TNA) will be carried out by the thematic group on Technology Transfer to identify technology needs for adaptation and mitigation using the assessment methodology developed by UNDP and as modified appropriately for Tonga. The TNA group will use a six-step process to complete the TNA.

Proposed activities

The synthesis report from this assessment will provide input to the chapters on vulnerability and adaptation and mitigation assessments in the Third National Communication.

Thematic working group on technology transfer and research and systematic observation will carry out the following activities relating to technology transfer based on the previous activities and the technology needs assessment (TNA):

- Capacity-building and training for the TWG will include learning how to apply the TNA methodology and the use of appropriate technology information databases such as the UNFCCC's TT: CLEAR and any relevant information provided by the Center for Technology Information.
- The barriers to the adoption of environmentally-sound technologies in Tonga will be identified, with a view to facilitating their removal. This work will build on the outcomes of a regional programme on Pacific Islands Greenhouse Gas Abatement and Renewable Energy, in which Tonga participates. Additionally, various public awareness programmes focusing on the benefits of various technologies will be carried out in communities/villages.

Major Outputs and Indicators

The major outputs and indicators of this Sub-Component will be:

- Completion of updated technology needs assessment involving all relevant stakeholders;
- Completion of a TNA synthesis report including priorities for adaptation and mitigation;
- Important inputs for both the JNAP and the National Energy Policy complementing the TERM;
- Strengthened capacity for the forestry sector to conduct mitigation assessments in the forestry sector including collection, analysis and management of database.
- Strengthened human, scientific, technical and institutional capacity to conduct mitigation assessment.

4.5.2 Research and systematic observation

This component of the national communication was not fully developed although much of the research and observations in Tonga on climate and climate parameters are conducted by the Tonga Meteorological Service. While Tonga participates in some of the global observing systems it is still limited at the national level by inadequate coverage of its observation network within the country. Concomitant capacity building needs include the need to upgrade agrometeorology and to tailor seasonal climate outlook for human health, agriculture, water resources in Tonga. Additionally training and capacity building is required in climate/weather forecasting and dilapidating conditions

of the existing meteorological stations. In terms of climate information and signal forecasting in dry season is made more difficult by almost non-existence of a winter signal during the winter months in Tonga.

Proposed Activities

Within the financial constraint of the present proposed project, the following activities will be carried out:

- Improvement in data collection, analysis and management and trend analysis of existing and recently collected temperature and rainfall data;
- Improvement in forecasting and development of seasonal climate outlook for human health, agriculture and water resources.
- Upgrade/improve existing and, where appropriate, establish additional meteorological stations.
- Establishment of early warning systems and improved coverage of national observation network;
- Analysis of rainfall (including floods and drought) under future climate change scenarios, current climate variability including tropical cyclones and ENSO with improved and high-resolution GCM patterns.
- Enhanced participation in and contribution to the activities and programmes, as appropriate, of regional and global research networks and observing systems, such as the Pacific Islands Climate Change Science Programme (PCCSP) funded by the Australian Government initiative on International Climate Change Adaptation Initiative (ICCAI) and the Global Climate Observing System (PI-GCOS) programme, which aims to establish a robust and sustainable climate observation and application system that meets the climate change and variability observations and application needs of the Pacific island nations and region and meets GCOS requirements;
- Preparation of a draft Synthesis Report on Research and Systematic Observation with special focus on ENSO, tropical cyclones and drought, building on the IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (<http://ipcc.ch/>).

The above activities will be undertaken by the Technology Transfer and Research and Systematic Observation Group, which is composed of staff members from the Tonga Meteorological Observatory. The capacity of the study team members will be strengthened where necessary, including the participation in sub-regional/regional/international workshops.

Major Outputs and Indicators

The major outputs and indicators of this component will be:

- Improved climate information and database;
- Specific research relating to seasonal outlook for critical climate sensitive sectors;
- Early warning systems for ENSO, tropical cyclones and drought established;
- Participation in and contribution to regional and global observation programmes;
- Improved Climatic information networks with regional and international organizations;
- Strengthened human, scientific, technical and institutional capacity for research and systematic observation;

4.5.3 Education, training and public awareness and information and networking

Proposed Activities

This component is considered a necessarily continuous process which will be part of the project implementation. Close collaboration and cooperation between the relevant ministries and non-government organizations will enhance the opportunities for integrating climate change issues and information across the various sectors. Opportunities exist for incorporating climate change science issues into the education curricula through the current and future reviews.

Based on the previous activities, the following activities are proposed:

- Preparation of outreach materials (leaflets, booklets, calendars, posters, quarterly newsletters, video, CD) and dissemination of these materials through mass media (TV, radio, newspapers, magazines, Internet, etc.). The information provided by regional and international organisations such as SPREP, IPCC, WMO, IUC/UNEP, UNITAR and the UNFCCC Secretariat through their web pages would be used as sources of information for outreach activities where appropriate. This activity will build on education, training and awareness initiatives that are already being undertaken in Tonga under the SNC process.
- Establishment of a dedicated website for climate change to facilitate information dissemination and sharing of experiences and lessons learned among communities. Capacity-building for updating and maintaining this website is essential in order to ensure its sustainability even after the completion of the project;
- Strengthening of education on climate change at the primary and secondary levels as well as with teacher education,
- Incorporation of climate change issues into non-formal education and into the different levels of curricula of the formal education systems;
- Identification of further constraints, gaps and specific financial, technical and institutional needs for capacity-building on public awareness, education and training will be identified and highlighted at the end of the activities.

Major Outputs and Indicators

The major outputs and indicators of this component will be:

- Educational and public awareness programmes at national and local village levels;
- More production and dissemination of outreach materials in English and Tongan;
- Incorporation of climate change science in the primary, secondary and post secondary school curriculum through current and future reviews;
- Enhanced understanding of climate change issues/concerns at primary and teacher education levels human,
- Improved general understanding of climate change issues in Tonga as a whole.

4.5.4. Improved information and networking

Access to and the use of information technology, such as Internet, is essential to ensure efficient exchange and sharing of information both within and outside the country. Information networking is an important activity in any project cycle. However, during the SNC project, acquisition of computers and access to Internet has been limited due to financial constraints. A dedicated internet

access for national communication process is essential for sharing and exchange of information at the various levels (local, national, regional and international).

Proposed Activities

The activities listed below have not been carried out effectively during the preparation of the second national communication. The preparation of the TNC will provide the best opportunity to carry out any number of these activities:

- Establishment of list serve for various thematic working groups to facilitate information networking;
- Participation and contribution to sub-regional and regional information networks on climate change issues, especially those relating to national communications;
- Provision of a list of national experts, including their expertise, who have participated in the preparation of the TNC;
- Assessment of current capacity in information communication technologies;
- Institutional strengthening, including human resources development, technical and technological capabilities on the use of information technology for climate change information sharing.

Major Outputs and Indicators

The major outputs and indicators of this component will be:

- Information networks and regular exchange of information among thematic working groups and between other countries of the region;
- Strengthened human, scientific, technical and institutional capacity in information networking.

4.5.5. Capacity-building

Previous Activities

The process of the preparation of the national communications (e.g. INC and SNC) has highlighted the real need for capacity building and training on a continuous basis. Thus every aspect of the preparation of national communication requires a certain level of capacity-building and training; most of which have been outlined under the various components of the TNC. Many of these activities highlight the limited human, scientific, technical, technological, organizational, and institutional and resources capabilities in Tonga for fulfilling its commitments, including the reporting requirements.

Proposed Activities

Decision 2/CP.7 provides that *“Capacity building is a continuous, progressive and iterative process, the implementation of which should be based on the priorities of developing countries.”* Tonga assumes the same view that capacity-building is a continuous process in developing the TNC.

Major Outputs and Indicators

A dedicated pool of national experts will be trained and available to work on the various components of the national communication.

4.6. CONSTRAINTS AND GAPS, AND RELATED FINANCIAL, TECHNICAL AND CAPACITY NEEDS

The analysis of information generated under the SNC so far indicated that this component of the national communication was not addressed adequately. However many of the gaps and constraints were identified within the context of the various components of the national communication. To be consistent with the UNFCCC guidelines further gaps will be identified through an analysis of the contributions made by the national government, bilateral/multilateral agencies and the Global Environment Facility, particularly for the preparation of the national communication, and the implementation of the Convention.

Main Outputs

- Technical, institutional, methodological, financial, and capacity related to each thematic area (inventory, abatement analysis, V&A) assessed and updated if any and ways to overcome them will be elaborated.

4.7. TECHNICAL SUPPORT

In recognition of the continuing capacity constraints identified in the TNC stocktaking technical advice and support (expertise, skills and know-how) will be required to use nationally-adapted methods and tools; tool-kits, for the preparation of the various aspects of the TNC. Support may be provided through a climate change portal, currently being developed and hosted at SPREP. The clearinghouse and technical support will include support for capacity building, education, training and public awareness, technology transfer, research and systematic observation under that various projects and programmes that Tonga is currently implementing (e.g. PACCSAP, PACC, GCCA:PSIS, and MESCAL).

UNDP, as the GEF Implementing Agency for this TNC preparation project, will be consulted on all aspects during the execution of the project. It will be fully informed of all activities and invited to actively participate in all technical and policy workshops related to the project, so that it can provide useful inputs and contributions to ensure the successful implementation of the project.

Technical assistance from other national, regional (e.g. CROP agencies) and international organizations, international consultants and experts will be sought where and when necessary and appropriate.

5. INSTITUTIONAL FRAMEWORK FOR PROJECT IMPLEMENTATION

The Head of Climate Change Division, the National Climate Change Coordinator (NCCC) and the Technical Working Group on Climate Change (TWG) will form the project management team for the preparation of Third National Communication. This will facilitate continuity and retention of the critical pool of expertise to undertake the various activities outlined in this TNC process. The Project Management Team (PMT) will work and undertake its tasks under the direction of the Head of Climate Change Division, Ministry of Lands, Environment, Climate Change and Natural Resources. The PMT will implement the project in close consultation and collaboration with other relevant government departments, the private sector, and NGOs.

As with the preparation of the second national communication, the same technical working groups will be formed to assist with the preparation of various components of the national communication: (i) National Greenhouse Inventory, (ii) Vulnerability and Adaptation; (iii) Mitigation; (iv) Technology transfer, Research and systematic observation; and (v) Education, training, public awareness and information and networking and Capacity-building. Each thematic working group will comprise of a number of experts drawing both from public and private sectors, communities, and NGOs, as appropriate. This will facilitate continuity and retention of institutional memory relating to the various activities as outlined in each component of the national communication.

Much of the same institutional and management arrangements for the SNC process will be retained in the TNC process. However, the technical and policy oversight to the project will be provided by the Taskforce on Joint National Action Plan for Climate Change Adaptation and Disaster Risk Management (JNAP Taskforce). The NCCC assisted by a Senior Climate Change Project Officer (SCCPO) and a Climate Change Assistant (CCPA) will facilitate the work of the JNAP Taskforce. The NCCC will report to the Head of Climate Change Division and be responsible for the operational programme of project implementation and will be located in the Ministry of Lands, Environment, Climate Change and Natural Resources (MLECC&NR). Further collaboration on activities relating to the preparation of the national communication will be strengthened with the JNAP Secretariat under the direction of the Head of Climate Change Division.

Figure 2 below shows the institutional framework and project management structure. The TNC preparation project will be executed by the MLECC&NR with the support of various government ministries as outlined in section C of this document. Additional assistance will be provided to the project by regional and international organizations and consultants, where appropriate. The NECC comprises various ministries and departments, as well as representatives from the private sector, local communities and NGOs. The JNAP Taskforce will ensure that the recommendations of the project are integrated into overall national strategic development planning framework and budgetary process.

NCCC will be appointed to coordinate the day-to-day execution of activities to be carried out by five thematic working groups, which will include experts both from public and private sectors, education institutions, local communities and NGOs. The NCCC, SCCPO and CCPA will provide secretariat support to the JNAP Taskforce. Operational oversight of the implementation of the TNC project will be provided by the Head of Climate Change Division..

The meetings of the JNAP Taskforce on the TNC process will be held every two months to review project implementation and provide scientific, technical, policy and strategic guidance. The minutes of these meetings will be shared with all participating institutions and UNDP as implementing agency of this project.

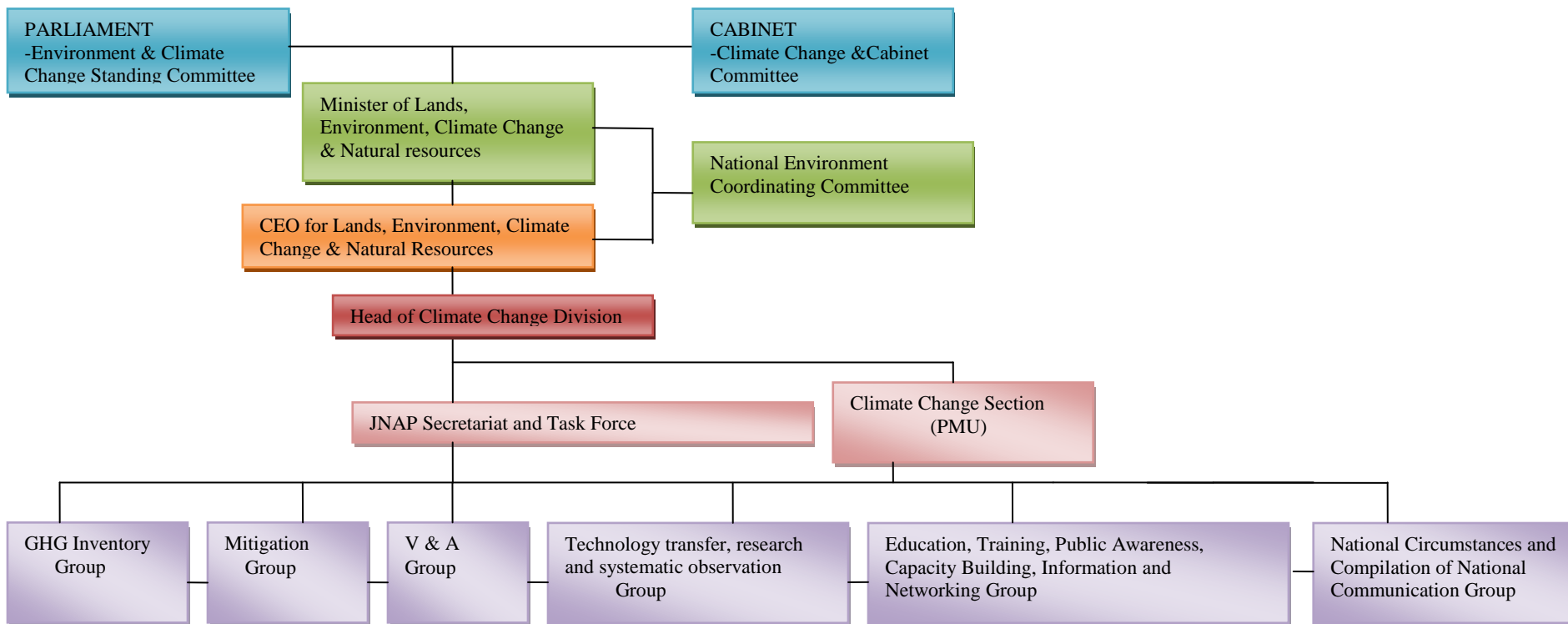


Figure 2: TNC Implementation Arrangements and Institutional Structure

6. ASSESSING PROJECT IMPACT

The procedures for UNDP on reporting, monitoring and evaluation have not changed since the completion of the SNC so for the TNC the same procedures will be followed throughout the project cycle. Six-monthly progress reports will be provided by the TNC project coordinator to UNDP and copy to all members of JNAP Taskforce and the MLECC&NR who will be hosting and executing the project. These reports will enable the JNAP Taskforce and UNDP to evaluate the progress of the project on a regular basis and identify difficulties and shortcomings with a view to overcoming them during the period of project implementation. The reports will be reviewed by UNDP for their quality and standard, comprehensiveness, and conformity to the proposed terms of reference and dates of completion. In addition, a mid-term review between UNDP and the MLECC&NR may be conducted. An independent evaluation by a qualified consultant will be conducted at the end of the project.

An independent financial audit will be conducted according to the UNDP rules and procedures. During the implementation of the project, regular financial statements will be prepared and provided to UNDP for accessing funds for project activities.

7. BUDGET

The total requested funding of US\$480,000 as itemized in Table page 12 reflects the current needs and concerns of the country relating to the preparation of the national communication. Although some capacity has already been built during the INC and SNC processes, further capacity-building, including training, for the project team members, especially those new members, are still very much needed. A significant portion of the funding requested would be used for human and institutional capacity-building or strengthening and developing processes for cross-sectoral coordination and cooperation, with a view to building a solid and sustainable technical team and management arrangements that would be responsible for preparing future national communications in a sustainable manner.

8. DETAILED WORK PLAN

It is expected that the proposed four year project will commence in October (Q4) 2012 and end in October (Q4) 2015. The detailed work plans for each component will be developed by the NCCC in full consultation with the JNAP Taskforce after the approval of the project, with the guidance and assistance of UNDP, which will be consulted throughout the project cycle. The table below shows the schedule of the TNC preparation activities.

Table B-2: TNC Preparation Project – Schedule of Activities

<i>Outputs/Activities</i>	Year 1				Year 2				Year 3				Year 4			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
1. National Circumstances																
1.1. Establish a TWG on National Circumstances and Compilation of National Communication (TNC)																
1.2. Review, validate and update information gaps for addressing climate change which emerged from the stock-taking exercise																
1.3 Analyse policies and planning processes for incorporation of climate change concerns into the national and/or regional development objectives, priorities, circumstances and programmes																
1.4 Update information on the features of national geography, climate, natural resources and socio-economic conditions																
1.5 Access new and/update information on development policies and priorities including the strategic planning and policy framework																
1.6 Analyse future development and implications for addressing the impacts of climate change and achieving the long term goals of sustainable development																
1.7 Draft Chapter 2: National																

<i>Outputs/Activities</i>	Year 1				Year 2				Year 3				Year 4			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Circumstances in accordance with the guidelines as contained in decision 17/CP.8																
2. Greenhouse Gas Inventory																
2.1. Re-establishment of the technical working group on GHG inventory																
2.2. Revise the SNC inventory data, taking into consideration data gaps and areas needing improvement identified in the stocktaking exercise																
2.3 Develop instructions for GHG data collection, documentation and QA/QC																
2.3 Conduct training workshop on the use of IPCC technical guidelines, GPG and GPG for LULUCF using UNFCCC GHG software																
2.4 Identify key-source categories of emissions																
2.5 Gather available data from national sources to fill inventory data gaps and identify and develop methods for overcoming inventory data gaps if there is no available data																
2.4. Undertake national GHG inventories for the most current year and revise 2000 data with any new data																
2.5 Describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, and efforts to make																

<i>Outputs/Activities</i>	Year 1				Year 2				Year 3				Year 4			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
this a continuous process, including information on the role of the institutions involved																
2.6 Develop an national inventory management system																
2.9. Prepare final GHG Inventory following the UNFCCC guidelines																
3. Programmes Containing Measures to Facilitate Adequate Adaptation to Climate Change																
3.1. Re-constitute the technical working group on vulnerability and adaptation assessment																
3.2 Organize a training workshop for the TWG on V&A on the use of available methods and tools including available GCM patterns for V&A assessment																
3.2. Review the scenarios for climate change, applying the most recent updated version of GCMs patterns and examine climatic conditions for Tonga																
3.3. Use the recently generated LiDAR data to conduct coastal inundation modeling																
3.4. Identify and assess impacts of climate change on marine resources and fisheries using updated GCM patterns and sea-level rise scenarios																
3.5. Undertake V&A assessment on tourism and infrastructure/settlements as well as sectors that require additional impacts studies such as agriculture, water resources,																

<i>Outputs/Activities</i>	Year 1				Year 2				Year 3				Year 4			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
and human health sectors																
3.6. Identify adaptation options, strategies and measures and conduct assessments on each of these for their cost-effectiveness.																
3.6. Develop evaluation criteria for use in assessing the feasibility and prioritization of each of the identified adaptation options, strategies and measures																
Priority Adaptation																
3.7. Carry out prioritization using multi-criteria analysis and conduct cost-benefit analysis of prioritised adaptation measures																
3.8. Develop project concepts for adaptation																
3.9. Synthesize information and prepare a national adaptation plan of action building on the JNAP and NCCAS																
3.9. Prepare adaptation chapter using the UNFCCC guidelines																
3.10. Organize workshop to discuss the results from V&A																
4. Programmes Containing Measures to Mitigate Climate Change																
4.1. Re-establish technical working group on Mitigation																
4.2. Review and update previous work on mitigation and renewable energy development building on the Tonga Energy Roadmap and energy-related project results																
4.3. Conduct training workshop																

<i>Outputs/Activities</i>	Year 1				Year 2				Year 3				Year 4			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
on the use of LEAP model for development of baselines																
4.4. Based on the results from the GHG Inventory, develop a baseline scenario for mitigation																
4.5. Develop a series of mitigation scenarios to abate the increase of the GHG emissions in terms of sustainable development objectives																
4.6 Prepare a draft mitigation plan aligned with the national energy policy and TERM																
4.7 Draft a mitigation chapter using the UNFCCC guidelines																
5. Other Information Considered Relevant to Achievement of the Objective of the Convention																
5.1. Re-establish Technical working group on technology transfer and research and systematic observation																
5.2. Conduct training workshop for TWG on technology needs assessment																
5.3. Assess and update the technology needs for adaptation and mitigation																
5.4. Prepare a synthesis report on the TNA																
5.5. Review evolving needs and priorities for research and systematic observation (RSO), building on the outcomes of similar regional and national projects and programmes																
5.6. Prepare a report on RSO using the UNFCCC guidelines																

<i>Outputs/Activities</i>	Year 1				Year 2				Year 3				Year 4			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
5.7. Re-constitute Technical working group on education, training and public awareness																
5.7. Update information on climate change on education, training and public awareness taking into account the review of teacher education and primary education curricula																
5.8. Review and update information and needs for capacity-building on the preparation of national communication and the implementation of the Convention and its related protocols.																
5.9. Prepare a chapter on climate change education, training and public awareness																
6. Constraints and Gaps and Related Financial, Technical and Capacity Needs																
6.1. Review, update and assess financial, technical and capacity needs while undertaking the activities, measures and programmes to implement the Convention and improve the national communication on the continuous basis																
6.2. Compile and analyze information on financial and technical resources or other in-kind contributions made available by Tonga for the preparation of SNC																
6.3. Compile and analyze information on financial																

<i>Outputs/Activities</i>	Year 1				Year 2				Year 3				Year 4			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
resources and technical support provided by GEF, Annex II Parties, bilateral/multilateral institutions, for activities related to climate change																
6.4. Develop project proposals on adaptation and mitigation for funding																
6.5. Prepare proposals for pilot demonstration projects on adaptation focusing on barriers and ways to overcome these barriers																
7. Preparation and submission of the TNC																
7.1. Compile a draft national communication and circulate it for comments																
7.2. Hold a national workshop to consider and endorse the draft TNC																
7.3. Finalize, seek endorsement of Government and submit TNC																

APPENDIX C: TERMS of REFERENCE

PROJECT MANAGEMENT

Post: National Climate Change Coordinator (NCCC)

I. Project background information

Tonga completed its second national communication and is about to submit it to the secretariat of the UNFCCC. The preparation of the SNC was supported by a GEF-funded enabling activity for the preparation of national communications.

In Tonga the Climate Change Coordinator was appointed and assumed the role of a National Climate Change Project Manager. The NCCC worked closely with the JNAP Taskforce and the TWGs to implement the project in collaboration with the various government and non-government agencies, institutions and ministries.

The project for preparation of the Third National Communication on climate change is to prepare and submit updated information on the key elements of information on how Tonga is dealing with climate change related issues. Furthermore, the work will ensure that climate change issues are not considered as separate to national and local environmental concerns by integrating objectives into national and local strategic planning and budgetary processes.

Duration of the project is 36 months.

II. Scope of the assignment

The NCCC will manage the project on a day-to-day basis and is accountable to the executing agency for the planning, management, quality control, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The NCCC will ensure the regular monitoring and feedback from activities already under implementation.

The NCCC will be located within the Climate Change Division (CCD) of Tonga's Ministry of Lands, Environment, Climate Change and Natural Resources. The NCCC will work closely with the UNFCCC focal point, the Technical Working Group on Climate Change and the JNAP Taskforce.

III. Duties and Responsibilities

The National Climate Change Coordinator (NCCC) will have the following duties:

- Prepare a detailed work plan and budget;
- Prepare and submit to UNDP and the MLECC&NR, regular progress and financial reports;
- Coordinate and oversee the preparation of the outputs of the TNC;
- Ensure effective communication and adequate information flow with the relevant authorities, institutions and government departments in close collaboration with the TWG and JNAP Taskforce;

- Ensure appropriate stakeholder participation in the project implementation and coordinate the work of all stakeholders under the guidance of the MLECC&NR and JNAP Taskforce and in consultation with the UNDP office;
- Ensure that information is available to the JNAP Taskforce about all Government, private and public sector activities, which impact on capacity development;
- Maintain and establish additional links with other related national and international programs and other Enabling Activities such as NCSA, NBSAP, PIGGAREP, NCCAS and other national projects including those funded externally;
- Prepare the Terms of Reference for consultants and experts and ensure their timely hiring;
- Guide the work of consultants and experts and oversee compliance with agreed work plan and timely completion of tasks;
- Organize and coordinate the procurement of services and goods under the project;
- Coordinate, manage and monitor the implementation of the Project activities/tasks undertaken by the various technical working groups, local experts; consultants, sub-contractors and co-operating partners;
- Assume overall responsibility for the proper handling of logistics related to all project workshops and events;
- Manage the Project finance, oversee overall resource allocation and where relevant submit proposals for budget revisions with the help of the UNDP officer;
- Undertake any other actions related to the Project as requested by the MLECC&NR and UNDP.
- Serve as secretary to the NECC as it relates to climate change activities, projects and programmes.

IV. Qualifications and Skills

- Advanced University degree (Masters level) in fields related to climate change and environmental management
- Minimum of 5 years of working experience in the area relevant to the project;
- Substantial involvement in the preparation of the national GHG inventory, vulnerability and adaptation assessment and the preparation of first national communication
- Demonstrated ability in managing projects, and in liaising and cooperating with all project stakeholders including government officials, scientific institutions, NGOs and private sector;
- Familiarity with international organizations operations and structure;
- Substantial experience in Government and in interdepartmental procedures
- Familiarity with international negotiations and processes under the UNFCCC
- Fluent written and oral communication in Tongan and English
- Strong communications and interpersonal skills
- Excellent computer knowledge (MS Office, Internet)
- Tonga citizenship

Post: SENIOR CLIMATE CHANGE PROJECT OFFICER (SCCPO)

I. Project background information

In the light of the implementation of the project a Senior Climate Change Project Officer (SCCPO) will be required to work closely with the NCCC in managing and supporting the implementation of

the activities/tasks relating to the preparation of TNC. The SCCPO will be located in the MECC who is responsible for the implementation of the UNFCCC.

Duration of the project is 36 months.

II. Scope of Work

The SCCPO will assist the NCCC in the coordination and implementation of daily activities in the preparation of second national communication. He/she will be responsible for the provision/facilitation of all scientific and technical material (relating to GHG inventory, V&A assessment, mitigation, technology transfer, research and systematic observation, education, training, public awareness, capacity-building and information and networking) to support the work of consultants and experts involved in the project.

III. Duties and Responsibilities

The SCCPO will have the following duties:

- Facilitate effective communication and adequate information flow with the relevant authorities, institutions and government departments in close collaboration with the TWG and NECC;
- Assist with the participation of appropriate stakeholders in the project implementation and provide support to the work of all stakeholders under the guidance of the NCCC;
- Make available information on climate change to all government, private and public sector programmes and activities, which impact on climate change capacity development;
- Establish and maintain database and information on various activities and programmes on climate change and on the implementation of the UNFCCC at the national level;
- Assist with the work of the consultants and experts involved in the project;
- Assist with the work of consultants and experts to ensure timely completion of tasks;
- Coordinate, manage and monitor the implementation of the project activities/tasks undertaken by the various technical working groups, local experts; consultants, sub-contractors and co-operating partners;
- Assume any other duties as determined by the NCCC;

IV. Qualifications and Skills

- Advanced University Degree (Masters Level) in environmental science, climate change or related field;
- Minimum of 3 years of working experience in the area of climate change project implementation;
- Substantial knowledge of GHG inventory, vulnerability and adaptation, and mitigation issues (methods, tools, etc);
- Experience in Government and in interdepartmental procedures;
- Familiarity with environmental issues and UNFCCC
- Fluent written and oral communication in Tongan and English;
- Strong time-management, organizational and communication skills;
- Excellent drafting skills for presentation of technical and scientific reports in meetings, workshops, and conferences;
- Experience with preparation of information for presentation in the national communication;

- Familiarity with various databases and information products and use of relevant websites for information collection and dissemination;
- Tonga citizenship.

Post: Climate Change Project Assistant (CCPA)

I. Project background in formation

The preparation of TNC will involve a multitude of tasks/activities ranging from project management, financing and administration to the implementation of day-to-day activities or tasks, which would be carried out, by numerous individuals and organizations. The CCPA will be located in the MECC who is responsible for the preparation of second national communication.

Project duration is 36 months

II. Scope of work

The CCPA will assist the NCCC and the SCCPO in the coordination and management of daily activities and the organization of local travel for national experts. He/she will also be responsible for all administrative (contractual, organizational and logistical) and all accounting (disbursements, record-keeping, cash management) matters under the Project.

III. Duties and responsibilities

The CCPA will have the following duties:

- Manage the day-to-day operations of the Climate Change Section (CCS), particularly with respect to the provision of technical services and support;
- Ensure that necessary financial, procurement, disbursement and personnel matters are effectively addressed;
- Compile and/or prepare the documentation necessary for the procurement of services, goods and supplies under the project;
- Ensure timely disbursement of funds from the project bank account;
- Maintain the project's files and supporting documentations;
- Maintain the project's disbursement ledger and journal;
- Prepare internal and external correspondence for the CCS
- Maintain files and assist in the preparation of documentation in advance of and following all meetings, edit reports and other documents for correctness of form and content;
- Organize meetings, training workshops, etc for the project personnel and the thematic working groups,
- Organize and coordinate information exchange between participating institutions and internationally
- Co-ordinate and assist in travel arrangements for project personnel or for representatives within the thematic working groups;
- Maintain and update the established national web site;
- Provide oral interpretation and written translation as required;
- Assist in the preparation of documents related to project activities; and,

- Undertake other administrative/financial duties as requested by the NCCC.

IV. Qualifications and Skills

- University degree or equivalent;
- Minimum of 3 years of working experience in the area of project administration/accounting;
- Demonstrated ability to cope with spreadsheets and book-keeping;
- Experience in Government and in interdepartmental procedures;
- Familiarity with environmental issues and UNFCCC preferred
- Fluent written and oral communication in Tongan and English;
- Strong time-management, organizational and inter-personal skills;
- Excellent computer knowledge (Word, Excel, Power Point, etc);
- Experience with preparation of information for presentation on web site;
- Tonga citizenship.

NATIONAL ENVIRONMENT COORDINATING COMMITTEE (NECC)

The National Climate Change Committee (NECC) will be responsible for supervising project execution. This will include evaluating project outputs to ensure that project activities are being carried out in a timely manner and to acceptable levels of quality, and reviewing the status and needs of countries throughout project implementation. The NCCC will provide a policy and technical platform for the project and in that context it will have the following duties.

III. Duties and Responsibilities

The NECC responsibilities will include the following:

- Provide operational directives to the TNC Project management team which will serve as a secretariat on matters relating to climate change,
- Make informed consensus decisions on issues arising from the Climate Change Convention, Kyoto Protocol and any future Plans for Action as decided by the Conferences of the Parties,
- Facilitating political inclusion in the national climate change process, particularly to encourage appropriate policy development to enable effective national responses to climate change.
- Coordinate International Climate Change negotiations, ensuring consistency, relevancy and real benefits to Tonga in participation,
- Inform respective departments on Climate Change issues, particularly consideration of climate change issues in sectoral policies and other department plans,
- Monitor and facilitate the work of the Greenhouse Gas Inventory Network, detailed in Chapter 6, and including any relevant data collection and information systems.
- Ensure that the Department responsible for settling the financial contributions of Tonga to the UNFCCC is accorded.
- Recognize and encourage human resource development in the field of scientific research and development, including the formulations of projects and joint projects, particularly in the context of Climate Change,
- Establish and coordinate the work the National Group of Experts.
- Ensure appropriate climate change acts/legislation is enacted.
- Facilitate access to funding for the national climate change effort.

- Endorse the detailed work plan, produced thematic reports, Final TNC Report and Action Plans;
- Propose to the Government to adopt the TNC for submission to the UNFCCC Secretariat.

TECHNICAL WORKING GROUPS

A. THEMATIC WORKING GROUP ON GHG INVENTORY

I. Scope of Work

The Technical Working Group on National GHG Inventory will be formed to carry out the inventory of GHG emissions in Tonga. The group will consist of experts from relevant ministries, institutions and agencies of government and non-government organizations. The group will ensure that specific tasks relating to the national GHG inventory is carried out in a timely manner and will ensure efficient coordination of outputs of consultants and national institutions. The activities undertaken by the national institutions will contribute to strengthening institutional arrangements for compiling, archiving, updating and managing GHG inventories.

II. Duties and Responsibilities

Particular duties may be as follows:

- Undertake national GHG inventories for the year 2000, according to the guidelines for the preparation of National Communications (17/CP.8)
- Participate in the training workshop on the use of IPCC guidelines, and GPG including one for the LULUCF;
- Include information on the other non-direct GHGs such HFCs, PFCs and SF₆ as well as CO, NO_x, SO_x and NMVOCs;
- Revise the input data, taking into consideration data gaps and areas needing improvement identified in the stocktaking exercise
- Collect/gather available activity data from national sources to fill inventory data gaps
- Identify and develop methods for overcoming inventory data gaps if there is no available data Identify barriers to obtaining existing data for key sources and propose solutions
- Archive relevant data for the project duration
- Calculate emissions for the year 2000 and any number of years up to the most current year for which data is available for all sectors
- Describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved
- Utilize the deliverables under the regional project,
- Organize (in cooperation with the NCCC) workshop for presentation and discussion on the results obtained from the GHG Inventory

III. Qualifications and Skills

The institutions and/ or expert individuals contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on climate research in Tonga
- Prior experience in inventory preparation, through involvement in the Initial National Communication

- Highly qualified scientists working in the fields of emission factor development or data collection methods
- Familiarity with the UNFCCC and IPCC technical guidelines

VI. Expected output:

A report of the National GHG Inventory in accordance with the UNFCCC guidelines which should include information on other non- direct GHGs: HFCs, PFCs and SF₆ as well as CO, NO_x, SO_x.

B. TECHNICAL WORKING GROUP ON VULNERABILITY ASSESSMENT AND ADAPTATION

I. Scope of Work

The TWG on V&A will consist of teams that have been established for preparing the SNC in Tonga. The group will ensure implementation of specific activities outlined below, as well as coordination of the outputs of other consultants engaged outside the institution. The activities undertaken by the national institutions will also strengthen institutional arrangements for systematic climate observation, data management and control, processing and updating of meteorological and hydrological services data.

II. Duties and Responsibilities

Particular duties may be as follows:

- Participate in the training workshop on V&A methods and tools available for V&A assessment work;
- Revise and update the scenarios for climate change, applying the most recent version of MAGICC-SCENGEN and other modeling tools such as downscaled projections and HYDSYS model for water resources;
- Use the GCM patterns and climate change scenarios generated by the Pacific Science Programme to conduct assessments on marines resources and fisheries
- Use the GCM patterns and climate change scenarios generated by the Pacific Science Programme to conduct vulnerability and adaptation assessments on infrastructure and human settlements.
- Identify the data needs, availability and suitability, and establish datasets baselines of the assessment.
- Prepare climate maps using GIS technology and identifying the highly vulnerable areas
- Review and update the vulnerability assessment of the following sectors: agriculture, water resources, natural ecosystems, forestry, and human health, including identification of vulnerable areas that are most critical
- Describe links between climate, and socio-economic baseline conditions of the country in the most vulnerable sectors
- Conduct and/or participate in the coastal inundation modeling using high resolution GCM outputs.
- Use outputs of the high resolution coastal inundation modeling to assess the vulnerability of the coastal resources, infrastructure and human settlements.
-

- Based on the output of the vulnerability assessment, evaluate the feasibility of available adaptation measures to meet their specific needs and concerns arising from the adverse effects from the climate change.
- Liaise and consult with the TWG on Technology Transfer and Research and Systematic Observation on issues relating to technology needs assessment and climatic conditions of Tonga;
- Organize (in cooperation with the NCCC) a workshop to present the results from V&A
- Prepare a chapter on Vulnerability Assessment and national adaptation priorities;
- Prepare a chapter on “Programmes containing measures to facilitate adequate adaptation to climate change,” in accordance with the UNFCCC guidelines.

III. Qualifications and Skills

The institutions and experts contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on climate research in Tonga
- Prior experience in vulnerability assessment and adaptation process, through involvement in the Second National Communication
- Highly qualified scientists working in the fields of climate observation and vulnerability analysis in the specific sectors
- Familiarity with the UNFCCC, IPCC methodology, MAGICC/SCENGEN and other modeling tools and methods.

IV. Expected output:

Updated report on vulnerability assessment and adaptation strategy for the following sectors: agriculture, water resources, coastal resources and human health. The second major output will be an assessment of the impacts of, and adaptation to climate change and sea-level rise on marine resources and fisheries, infrastructure and human settlements in Tonga.

C. TECHNICAL WORKING GROUP ON MITIGATION

I. Scope of Work

The Technical Working Group on Mitigation will be responsible for carrying out GHG mitigation analyses and identifying mitigation options for Tonga. It will ensure timely and effective implementation of specific activities outlined below, as well as coordination with the outputs of other consultants engaged outside the institution.

II. Duties and Responsibilities

- Based on the results from the GHG Inventory and future development plans, particularly in the energy and land use change and forestry sectors, develop a baseline and mitigation scenarios to abate the increase of GHG emissions.
- Consider the main national economic and social development trends in the analysis, including expected GHG emissions in energy, agriculture, land-use change and forestry and waste management,

- Participate in the training on the use of LEAP model for development of baselines in the energy sector to be used for mitigation assessment;
- Extend the analysis on the side of energy consumption, including energy consumption in the industry (for heating, for technological processes), in the public sector and in the residential sector;
- Revise the measures contained in the SNC according to the latest economic development, including quantitative measures in all sectors;
- Finalize the GHG mitigation analysis using the selected tools and additional background information in order to finalize the cost-benefit analysis of the different measures, develop a series of mitigation scenarios to abate the increase of the GHG emissions
- Liaise and consult with the TWG on GHG Inventory and the TWG on Technology Transfer and Research and Systematic Observation on matters relating to GHG inventories and on technology needs for mitigation;
- Assessment of technology options for the different mitigation options in various sectors as provided by the TNA.
- Prepare final report on GHG mitigation and national action plan, including comments from the stakeholders

III. Qualifications and Skills

The institutions contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on climate research in Tonga
- Experience in preparing scenarios for GHG mitigation through involvement in the First National Communication
- Qualified scientists working in the related areas: Energy, Agriculture, Land Use Change and Forestry and Waste.
- Familiarity with the UNFCCC software and modeling tools such as LEAP.

IV. Expected output:

A Completed GHG Mitigation report and National action plan for effective response to the GHG emissions in line with the national energy policy and TERM.

The proposed activities will be undertaken in appropriate sequence so as to maximize the synergies between each component of the proposed activities, as well as the efficiency and cost-effectiveness for the implementation throughout the project cycle.

D. TECHNICAL WORKING GROUP ON TECHNOLOGY TRANSFER AND RESEARCH AND SYSTEMATIC OBSERVATION

I. Scope of Work

The Technical Working Group on Technology Transfer and Research and Systematic Observation will be responsible for carrying out technology needs assessment for mitigation and adaptation; and for assessing the needs and priorities for research and systematic observation in Tonga. The group

will ensure timely and effective implementation of specific activities outlined below, as well as coordination with the outputs of other consultants engaged outside the institution.

II. Duties and Responsibilities

- Participate in a training workshop on the technology needs assessment and the use of the UNFCCC guidelines on research and systematic observation;
- Carry out adaptation and mitigation technology needs assessment for Tonga
- Liaise closely and consult with the TWGs on GHG inventory, Vulnerability and Adaptation, and Mitigation on issues of relevance, especially on climate data, technologies and capacity building.
- Provide substantive input to the work of TWGs on Vulnerability and Adaptation and Mitigation
- Formulate an action plan for technology needs for mitigation and adaptation including assessment of technology options in various sectors, institutional capacity-building needs, related legal and institutional frameworks;
- Organize (in cooperation with the NCCC) a workshop to present the results of the technology needs assessment and research and systematic observation
- Prepare final report on technology transfer issues and research and systematic observation, including comments from the stakeholders

III. Qualifications and Skills

The institutions and or expert individuals contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly-recognized scientific expertise on various technologies and climate research in Tonga;
- Experience in preparing a report on technology, research and systematic observation through involvement in the Initial National Communication
- Qualified scientists working on issues relating to climate, weather, meteorology and hydrological services;
- Familiarity with the methodologies for technology needs assessment and the UNFCCC guidelines.

IV. Expected output:

A completed technology needs assessment for Tonga and a final report on Research and Systematic Observation including emerging needs and priorities.

E. TECHNICAL WORKING GROUP ON EDUCATION, TRAINING AND PUBLIC AWARENESS, INFORMATION AND NETWORKING AND CAPACITY-BUILDING

I. Scope of work

The TWG on ETPA, INFNET and CBT will be responsible for compiling information on the needs and priorities for ETPA, INFNET and CB. The group will examine ways to promote climate change education, training and public awareness building on the work already done on this issue during Phase II enabling activities. The group will ensure timely and effective implementation of specific

activities outlined below, as well as coordination with the outputs of other consultants engaged outside the institution.

II. Duties and responsibilities

- Review and update information on activities/tasks relating to climate change education, training and public awareness
- Review and update capacity building needs for preparation of national communication and implementation of the UNFCCC at the national level.
- Identify the needs and priorities for climate change education, training and public awareness and capacity-building as they relate to GHG inventory, vulnerability and adaptation assessment, mitigation, technology transfer, research and systematic observation and other emerging priorities;
- Identify technology needs for information and networking;
- Conduct a workshop (in collaboration with NCCC) on ways to promote climate change education, training and public awareness;
- Prepare a chapter on: (i) Education, Training and Public Awareness, (ii) Information and Networking, (iii) capacity-building for inclusion in the compilation of the SNC.

III. Qualifications and Skills

The institutions and or expert individuals contracted for undertaking project activities should meet the following minimum criteria:

- Sound and broadly knowledge of education, training and public awareness issues in Tonga
- Experience in preparing a report on Education, Training and Public Awareness
- Qualified scientists working on issues relating to climate, weather, meteorology and hydrological services;
- Familiarity with climate change science education and training issues/concerns in Tonga.

IV. Expected output

A completed chapter on “Climate education, training and public awareness in Tonga”

F: TECHNICAL WORKING GROUP ON NATIONAL CIRCUMSTANCES AND COMPILATION OF THE THIRD NATIONAL COMMUNICATION

I. Scope of Work

The TWG on National Circumstances and the compilation of the TNC will be responsible for preparing updated information of the national circumstances of Tonga which will have a bearing on how the country has been dealing with climate change. The TWG will review, update and analyse information relating to the policies and measures the government of Tonga is pursuing in addressing climate change concerns and issues. The TWG will also be responsible synthesizing the information generated by the various TWGs on aspects of the national communication so as

to develop a well informed Third National Communication of Tonga under the UNFCCC. TWG will use the UNFCCC guidelines for the preparation of national communications from non-Annex I Parties, as annexed to decision 17/CP.8.

II. DUTIES AND RESPONSIBILITIES

- Review and update information on development priorities, challenges and concerns and their implications of addressing climate change issues/concerns
- Review, update and analyse information relating to geography, economy, population, energy and other relevant sectors of the economy.
- Identify needs, priorities and constraints relating to social and economic development in the context of climate change priorities.
- Compile a synthesis of information into a comprehensive report on Third National Communication
- Revise, update and finalise the draft TNC
- Make arrangements in consultation with the JNAP Taskforce and NCCC to get the TNC endorsed by the Government of Tonga.
- Organise in consultation with the JNAP Taskforce and the NCCC, a national workshop to launch the Third National Communication of Tonga

III. Qualifications and Skills

- Sound and broad knowledge of geography, economy and development priorities, planning and budgetary education, training and public awareness issues in Tonga
- Experience with the government system and strategic planning frameworks
- High level skills in writing reports and conducting research and literature review
- Familiarity with climate change issues affecting Tonga and ways to address these issues/concerns.

IV. Expected output

Completed chapter on “National Circumstances” and the Third National Communication Report.

SCOPE OF AUDIT

Scope of Work

The scope of the audit should be sufficiently clear to properly define what is expected of the auditor but not in any way restrict the audit procedures or techniques the auditor may wish to use to form an opinion. It should specify at least the following:

- A definition of the entity or the portion of an entity that is subject to audit. (This will normally be the project office whether located within a government department or in a separate location.)

- That the audit will be carried out in accordance with either ISA10 or INTOSAI11 auditing standards.
- That the audit period is 1 January to 31 December of the year 20XX.
- That the scope of the audit is limited to the executing agency expenditures, which are defined as including (1) all disbursements listed in the quarterly financial reports submitted by the executing agency and (2) the direct payments processed by UNDP at the request of the executing agency.
- That the auditor will verify the mathematical accuracy of the CDR by ensuring that the expenditures described in the supporting documentation (the quarterly financial reports, the list of direct payments processed by UNDP at the request of the government, the list of disbursements made by UNDP as part of support services, and the UN agency expenditure statement) are reconciled to the expenditures, by disbursing source, in the CDR.
- That the auditor will state in the audit report the CDR expenditures excluded from the scope of the audit because they were made by UNDP as part of support services and the total expenditures excluded because they were made by a UN agency.
- That the auditor will state in the audit report if the audit was not in conformity with any of the above and indicate the alternative standards or procedures followed.

The Audit Report

The TOR should clearly indicate the expected content of the auditor's opinion. (Refer to Annex 2 for a sample Audit Report.) This would include at least the following:

- That it is a special purpose report and its intended use.
- The audit standards that were applied (INTOSAI standards, ISAs, or national standards that comply with one of these in all material respects).
- The period covered by the opinion.
- The scope restriction for those expenditures that are the responsibility of UNDP (as part of support services) or a UN agency.
- Whether the CDR presents fairly the expenditures for the project and that the funds were utilized for the purposes described in the project document and work plans.

This section should also indicate the due date for submission of a draft audit report and the signed audit report to the executing agency, as well as the due date for the submission of the signed audit report to UNDP.

Management Letter

The TOR should specify that the auditor would submit a management letter at the completion of the audit. Guidance should be provided regarding the topics/issues to be covered in the management letter. At a minimum, the following topics/issues should be included:

- A general review of project progress and timeliness in relation to progress milestones and the planned completion date, both of which should be stated in the project document. This is not

¹⁰. International Standards of Auditing (ISA) published by the International Auditing Practices Committee of the International Federation of Accountants

¹¹ International Organization of Supreme Audit Institutions

intended to address whether there has been compliance with specific covenants relating to specific performance criteria or outputs. However general compliance with broad covenants such as implementing the project with economy and efficiency might be commented upon but not with the legal force of an audit opinion.

- An assessment of the project's internal control system with equal emphasis on (i) the effectiveness of the system in providing the project management with useful and timely information for the proper management of the project and (ii) the general effectiveness of the internal control system in protecting the assets and resources of the project.
- A description of any specific internal control weaknesses noted in the financial management of the project and the audit procedures followed to address or compensate for the weaknesses. Recommendations to resolve/eliminate the internal control weaknesses noted should be included.
- Comments as to whether recommendations made in the management letter for the previous audit were implemented or, if not, the implementation status.

More detailed guidance for each of the above general categories is provided below.

Review of project progress

As part of the general review of project progress, specific steps could include the following:

- Review annual and quarterly work plans, quarterly financial reports, and requests for direct payments and assess in terms of their timeliness and their compliance with the project document and the UNDP Programming Manual (6.5.3 and 6.5.4).
- Review the Annual Project Reports prepared by the executing agency and assess in terms of compliance with UNDP guidelines and whether the executing agency met its responsibilities for monitoring described in the project document and work plans.
- Review whether the decisions and/or recommendations of the above activities have been followed through by the executing agency.
- Review the pace of project progress and comment on the causes for delays.
- Comment on whether implementation services of the UN Agency(s) were provided in line with project document and the work plan.

Assessment of internal control

The auditor is expected to conduct a general assessment of internal controls according to established internal control standards. An example of established internal control standards is available from the Organization of Supreme Audit Institutions (INTOSAI). The INTOSAI standards are intended for use by government managers to use as a framework to establish effective internal control structures. For further information, the INTOSAI *Guidelines for Internal Control Standards* can be found on the INTOSAI Web site www.intosai.org. An overview of the standards can be found in the UNDP Contact tool (Chapter 6).

In addition to the above general assessment, additional specific steps could include the following:

- Review expenditures made by the executing agency and assess whether they are in accordance with project document, work plans and budgets; and are in compliance with the UNDP Programming Manual (6.4).

- Review the process for procurement/contracting activities and assess whether it was transparent and competitive.
- Review the use, control and disposal of non-expendable equipment and assess whether it is in compliance with the UNDP Programming Manual (6.4.5); and also whether the equipment procured met the identified needs and whether its use was in line with intended purposes.
- Review the process for recruiting project personnel and consultants and assess whether it was transparent and competitive.
- Review the executing agency accounting records and assess their adequacy for maintaining accurate and complete records of receipts and disbursements of cash; and for supporting the preparation of the quarterly financial report.
- Review the records of requests for direct payments and ensure that they were signed by authorized government officials.

Recommendations for improvement

- Recommendations should be directed to a specific entity so there is no confusion regarding who is responsible for implementation. The response of the entity should be included in the management letter, immediately following the recommendation.
- Also, the auditor may wish to comment on “good practices” (if any) that were developed by the executing agency that should be shared with other project personnel.

Available Facilities and Right of Access

- There should be a description of the nature and the location of all records belonging to the project. This list should specify those records kept at the executing agency's headquarters and those that are located at other offices.
- The TOR should state that the auditor would have full and complete access at any time to all records and documents (including books of account, legal agreements, minutes of committee meetings, bank records, invoices and contracts etc.) and all employees of the entity. The auditor should be advised that he/she has a right of access to banks, consultants, contractors and other persons or firms engaged by the project management. If an auditor may not have unrestricted access to any records, person or location during the course of the audit, this restriction should be clearly defined, with reasons, in the TOR.

APPENDIX D: ENDORSEMENT LETTERS

UNFCCC Focal Point and the GEF Focal Point

SIGNATURE PAGE

Country: KINGDOM OF TONGA

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

Expected Outcome(s)/Indicator (s): Enhanced Government capacity and commitment to meet its obligations under UNFCCC

(CP outcomes linked to the SRF/MYFF goal and service line)

Expected Output(s)/Indicator(s): Environmental considerations integrated into national development policies, strategies, programmes and projects

(CPAP outcomes linked to the SRF/MYFF goal and service line)

Implementing partner: Ministry of Environment and Climate Change

Other Partners: UNDP

Programme Period: 2012-2015
Programme Component: Energy and Environment for Sustainable Development
Project Title: ENABLING ACTIVITIES FOR THE PREPARATION OF TONGA’S THIRD NATIONAL COMMUNICATION TO THE UNFCCC
Project ID: 00085018
Project Duration: 4 years
Management Arrangement: NEX

Budget US\$ 480,000
General Management Support Fee
Preparation phase US\$ 20,000
Total budget: US\$ 500,000
Allocated resources:
• Government (in kind) US\$ 40,000
• Regular _____
• Other:
 ○ Donor _____
 ○ Donor _____
 ○ Donor _____
• In kind contributions _____
Unfunded budget: _____

Agreed by **(Government)**: _____

Agreed by **(Implementing partner/Executing agency)**: _____

Agreed by **(UNDP)**: _____

Agreed by **(UNDP)**: _____

SIGNATURE PAGE

Country: KINGDOM OF TONGA

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

Expected Outcome(s)/Indicator (s): Enhanced Government capacity and commitment to meet its obligations under UNFCCC

(CP outcomes linked to the SRF/MYFF goal and service line)

Expected Output(s)/Indicator(s): Environmental considerations integrated into national development policies, strategies, programmes and projects

(CPAP outcomes linked to the SRF/MYFF goal and service line)

Implementing partner: Ministry of Environment and Climate Change

Other Partners: UNDP

Programme Period: 2012-2015
 Programme Component: Energy and Environment for Sustainable Development
 Project Title: ENABLING ACTIVITIES FOR THE PREPARATION OF TONGA'S THIRD NATIONAL COMMUNICATION TO THE UNFCCC
 Project ID:
 Project Duration: 4 years
 Management Arrangement: NEX

Budget	US\$ 480,000
General Management Support Fee	
Preparation phase	US\$ 20,000
Total budget:	US\$ 500,000
Allocated resources:	
• Government (in kind)	US\$ 40,000
• Regular	_____
• Other:	
○ Donor	_____
○ Donor	_____
○ Donor	_____
• In kind contributions	_____
Unfunded budget:	_____

Agreed by (Government): 

Agreed by (Implementing partner/Executing agency): 

Agreed by (UNDP):  21/11/12

Agreed by (UNDP): _____