THE NATIONAL CAPACITY SELF ASSESSMENT FOR GLOBAL ENVIRONMENT MANAGEMENT

STOCKTAKING AND THEMATIC ASSESSMENT REPORT

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EXECUTIVE SUMMARY

The people, environment and economy of the Kingdom of Tonga are highly susceptible to the effects of climate change, climate variability and sea level rise. This high vulnerability is a function of the country's degree of exposure to climatic events and its limited capacity to adequately adapt to these effects. Although the concentrations of Tonga's GHG emission are insignificant in comparison to global standards, the country is still working towards effectively implementing its share of the global actions aimed at mitigating the causes of climate change. Such adaptation and mitigation requirements are putting significant pressure on the country's limited resources and international and regional assistance has been a main source of support. Since acceding to the United Framework Convention on Climate Change (UNFCCC) in 1998 the government and people of the Kingdom of Tonga have been implementing measures to address climate change issues at the national level and contribute to global efforts. While there has been some progress there are also a range of areas where more work is needed and where capacity needs to be developed and strengthened. This report presents the experiences and challenges faced by the government and people in addressing climate change related issues and identifies the priority capacity development needs of the country to enable it to address climate change and also meet its obligations as a Party to the UNFCCC.

Recognizing the challenges faced in addressing environmental issues and meeting international commitments, the Government of the Kingdom of Tonga committed to implementing the National Capacity Self Assessment (NCSA) enabling activity. The opportunity was made possible with funding from the Global Environment Facility through UNDP. The NCSA is intended for countries to assess their ability to address environmental issues and related underlying capacity requirements as required of them under the UNFCCC, UNCBD and UNCCD. This report is one of the outputs of the NCSA and was compiled after carrying out a national stock-take and thematic assessment consultation exercise. The findings from this report will be used in other related reports that identify cross-cutting issues and actions for addressing priority capacity needs.

The results of the stock-take exercise show that Tonga has taken steps to address climate change issues and meet its convention obligations. Some highlights include;

a. Development and official endorsement of a Climate Change Policy Framework
b. Establishment of a national coordination mechanism and convention focal points
c. Development of inventories of GHG emissions through the Initial National Communications
d. Conducting of initial vulnerability assessments at a broad national level
e. Implementation of adaptation initiatives involving communities
f. Training of personnel from government and other stakeholder organizations in a range of climate change related issues
g. Participation in regional and international research and monitoring activities

h. Strengthening systematic observation through improvements to the meteorological services
i. Conducting awareness raising activities with schools, communities and the general public

The exercise also identified priority outstanding issues and gaps that are still to be addressed. These include:

a. Mainstreaming of Climate Change issues, particularly adaptation into national and sector planning and decision-making processes
b. Conducting detailed vulnerability assessments to guide planning and implementation of adaptation programmes and activities
c. Ratification of the Kyoto Protocol
d. Strengthening the links between government, NGO's and communities and empowering communities to be more active participants in climate change related programmes and activities
e. Improve the integration of climate change issues into the national formal and non-formal education curricula
f. Establish mechanisms and capacity to assess technology options that can contribute to mitigation measures
g. Strengthening enforcement of legislation that can contribute to increased mitigation
h. Strengthen coordination and collaboration mechanisms to achieve synergies while addressing cross-cutting environmental and capacity issues
i. Sustaining government services to support climate change work
j. Improving data collection, analysis, storage and accessibility

The thematic assessment analyzed the root causes of the above gaps and identified priority underlying capacity development issues and needs that will have to be addressed if Tonga is to strengthen its effectiveness in addressing climate change. The areas of priority capacity development needs include;

- Increasing awareness amongst decision and policy makers
- Capacity to seek and secure resources for climate change programmes and initiatives including; funding both from national and , human resources, appropriate infrastructure and technical equipment
- Raising and increasing awareness amongst local stakeholders to influence a change in attitudes and an increased involvement by stakeholders in environmental issues
- Improve availability of climate change information and exchange through networking locally and regionally
- Increase cooperation and coordination among relevant stakeholders
- Develop an appropriate mechanism to ensure long term monitoring and evaluation of climate change impacts and effectiveness of actions taken to address them
- Strengthen capacity for better law enforcement

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1.0 INTRODUCTION

1.1 SALIENT ENVIRONMENTAL AND SOCIO-ECONOMIC FACTORS – THE EXTENT OF VULNERABILITY

The climate of the earth is always changing and such alteration exists as a result of natural causes. However, there have been major changes in climate in the last century projected over the next hundred years which are believed to be mainly induced by human activities. They alter the composition of the global atmosphere, which in turn affects the biosphere and hydrosphere.

The First World Climate Conference was held in Geneva, February 1979. Scientific evidence regarding the anthropogenic interference with the global climate system was presented. In 1988, the United Nations General Assembly (UNGA) adopted a resolution to protect the global climate for present and future generations of mankind. In 1990, the UNGA passed resolution to negotiate on a climate change convention. The United Nations Framework Convention on Climate Change was adopted during the United Nations Conference on the Environment and Development in Rio de Janeiro, BRAZIL, 9 May 1992. It entered into force on 20 March 1994.

The ultimate objective of the UNFCCC is to stabilize the concentrations of greenhouse gases in the atmosphere at a level that would prevent the anthropogenic interference with the global climate system.

The Kingdom of Tonga is extremely vulnerable to the adverse effects of climate change, climate variability and sea level rise. Its physiographic, ecological and socioeconomic characteristics make Tonga highly sensitive to these unfavourable conditions and its biodiversity, agriculture, fisheries, health and water supplies also become affected. This means Tonga will be among the first to suffer such adversities and will find adapting extremely difficult.

Failure to implement immediate adaptation to climate change, climate variability and sea level rise will indeed lead to high social and economic costs in Tonga.

1.1.1 Geographic Background

Figure 1: Tonga and its location in the Pacific

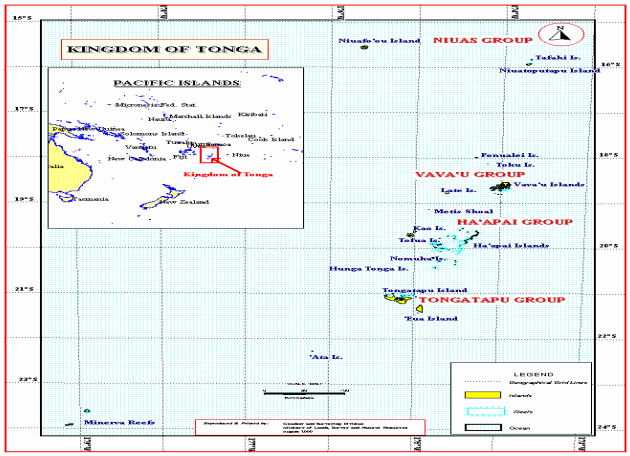
The Kingdom of Tonga is a small island developing country located in the Central South Pacific. It lies between 15° and 23° 30' South and 173° and 177° West. Tonga has a combined land and sea area of 720,000km2. It is an archipelago of 172 named islands with an area of 747km2 of which 36 islands are inhabited with an area of 670km2.

Tonga consists of four main island groups. Tongatapu and 'Eua in the south, Ha'apai in the middle, Vava'u in the north and Niuafo'ou and Niua Toputapu in the far north (Figure 2). Tongatapu, the main island is a raised coral atoll and is distinctively flat. Vava'u is mostly raised coral atolls whereas Ha'apai is typically flat and consists of volcanic and low coral islands. The Niuas are high volcanic islands surrounded by fringing and barrier reefs.

These small islands surrounded by vast ocean are susceptible to impacts of climate change, variability and sea level rise. Furthermore, Tonga sits at the edge of a convergent plate boundary (Pacific Plate & Indo-Australian Plate) and it is forced up as the Pacific Plate pushes under it at the Tonga Trench which is one of the lowest segments of the ocean floor (in places over 10 km deep) thus making Tonga vulnerable to the effects of earthquake, volcanism and tsunami which are characteristics of such boundaries.

1.1.2 Climate

Figure 2: Islands of Tonga



The climate varies, becoming cooler and drier in the south. The average rainfall in the most northern island is 2500mm whereas it drops to 1700 in the more southern islands. The average temperature also varies from 23.5 ^{0}C on the northern islands to 23 ^{0}C at the southern island of Tongatapu. Mean humidity is about 75 percent. The

country experiences frequent severe tropical cyclones during the summer months of November to April.

1.1.3 Population

The total population of Tonga in its 1996 census was 97,784. Tongatapu holds 69% of the total population, Vava'u 16%, Ha'apai 8%, 'Eua 5% and the Niuas 2%. About 70% of Tonga's population and infrastructures are located in the coastal areas/zones, rendering them highly vulnerable to climate change, variability and sea-level rise.

1.1.4 Economy

Agriculture forms the basis of Tonga's economy and is the means of livelihood for most of the population. It accounts for about 90% of export revenue. The main crops exported include squash, tropical fruits and vegetables, vanilla and kava (Statistics Department, 1999).

Tourism is a growing industry in Tonga and has become a major component of the economy with every indication that the rate of growth will continue. About 35,000 tourists a year visit Tonga (Stanley, 2004). Tourism is now a significant employer and the hospitality trade is likely to expand.

Migrant remittances and aid flows are also characteristics of Tonga's economy. Remittances sent from Tongans working abroad are a significant component of the Tongan economy.

About 55% of the population is employed in the Agriculture, Forestry, Fishing and Tourist Industries (Statistics Department 1999).

Tourist attractions and accommodation are concentrated in coastal areas and would therefore be vulnerable to the impact of climate change. Agriculture will also be affected if land is inundated and those directly employed in these industries would be affected as well. They are most likely to lose their jobs in this situation thus contributing to poverty in the country.

1.1.5 Health

The general health of the population is good. Control of endemic diseases is progressing. According to the report of the Minister of Health (2004) the leading causes of death are diseases related to poor sanitation and hygiene such as gastroenteritis, infantile diarrhoea and acute respiratory infections such as influenza, and bronchopneumonia. Dietary changes have resulted in rising incidences of obesity, hypertension, heart diseases and diabetes (Douglas, 1994).

Local food (root crops, wild food, fish etc.) is considered to be very nutritious and healthy. However, climate change and sea level rise on the island will result in an increased dependence on imported food

of low nutritional value as agricultural production and seafood availability decrease. As such non-communicable diseases are likely to be more widespread.

1.1.6 Biodiversity

Few parts of the country are still forested, particularly on the island of 'Eua, but these resources are rapidly dwindling as demands for building materials, firewood and carving requirements continue.

There are some 43 species of birds in Tonga although the most unusual and colourful of them are on the verge of extinction. Tonga has few animals and reptiles.

The biodiversity of Tonga is very fragile and is highly susceptible to the impacts of climate change, variability and sea level rise.

1.1.7 Water Resources

Tonga is largely dependent on underground water and rain water collected in cisterns. The fresh water forms a lens which extends above sea-level just one fortieth (1/40) of the depth to which it extends below sea-level. The level of the water table (surface of freshwater lens) relative to the surface of the island is controlled by sea-level (Nunn, 1994).

Because Tonga is generally low, the freshwater lens is thin in most areas. If the sea level rises, freshwater resources would be jeopardized by thinning of the freshwater lens. This can also occur with continuous pumping of freshwater to the surface; saltwater is likely to be encountered as experienced in Ha'apai.

The effects of global warming on the coastal infrastructure caused by sea-level rise and changes in climatic oceanic conditions are serious. There have been increased incidences of coastal inundation and erosion and occurrences of cyclones. If global warming continues at its current pace, Tonga's population, settlements, resources, and other vital social and economic zones which are located in vulnerable low-lying coastal areas, would be greatly affected.

1.2 ENVIRONMENTAL ISSUES

One of the principal current environmental issues in Tonga is deforestation, particularly the removal of native forests and coconut woodlands. Soil erosion is a serious environmental problem in parts of Tonga, and is often associated with deforestation and/or agricultural development particularly in steep land areas.

The subdivision and clearance of mangrove areas in Tongatapu and Vava'u are of considerable concern. When these mangroves are reclaimed for housing and agricultural purposes, the land is rarely raised to a sufficient height in order to avert the danger of flooding which normally accompanies storms and unusually high tides. The environmental and biological functions of mangrove ecosystems are therefore lost hence resulting in coastal erosion and decreasing productivity.

Solid waste disposal is also realized as a serious problem in Tonga, particularly in Nuku'alofa where the main garbage dump for household wastes and other non-hazardous wastes, including septic sludge, is situated in a mangrove area. In addition to the main refuse site, there are also other official and unofficial sites, some of which are constructed to enable tip-trucks to deposit refuse directly into the sea.

Throughout Tonga, informal beach sand mining is a common practice, causing many problems. Prominent among these is the exacerbation of shoreline erosion by removal of the protective beach cover. If these protective ecological systems continue to be placed under stress, the process of deterioration will be greatly accelerated by future climate change.

There is also a heavy reliance on imported petroleum predominantly for transportation and power generation. In 1993, a total of 9.79 million litres of diesel oil was consumed, of which 4.29 million litres was used in the power sector, 3.85 million litres for the transportation sector and the rest in the agricultural, industrial and residential/commercial sectors. A total of 5.62 million litres of gasoline was consumed in 1993 where 96% was consumed in the transportation sector and the rest was used up in the agricultural sector. Electricity generation will continue to rely mostly on petroleum products and will definitely be the most important secondary energy source.

1.2.1 Tonga and the UNFCCC

Tonga acceded to the UNFCCC on 20th July 1998 and accepted the commitments to take positive actions to fulfil its obligations under the UNFCCC. On becoming a non- Annex 1 Party to the convention Tonga accepted the commitments to take positive actions to comply with the convention's requirements, particularly Articles 4 and 12.

Since accession to the UNFCCC Tonga has taken steps to contribute to global mitigation actions and to begin to strengthen its adaptation capacity. The section of this report on stock-taking outlines the progress made in addressing climate change through addressing the urgings and obligations in the Convention Articles and following up on decisions of the Conference of Parties (COP). An initial National Communications has been completed recently with a complete inventory of emissions. Although the rate of emissions is insignificant by world standards Tonga is committed to contributing to

mitigation actions particularly in assessing the options for using appropriate renewable energy technologies.

The Honourable Ministers of Cabinet have approved a submission for Tonga to sign the Kyoto Protocol. The Department of Environment is currently awaiting the final approval of the said submission by His Majesty's Council.

1.3 STOCKTAKING AND THEMATIC ASSESSMENT OF THE NCSA

The Stocktaking and Thematic Assessment were two significant steps in conducting the capacity self assessment. The stocktaking exercise clearly defines the obligations of Tonga under the UNFCCC. It also identifies the full range of activities that are currently in place which meet Tonga's commitment under the aforementioned convention.

The stocktaking results have formed the basis of the Thematic Assessment of the UNFCCC, Tonga. The Thematic assessment dealt with a thorough self-assessment and analysis of capacity constraints, priorities and needs to meet UNFCCC obligations.

2.0 THE NCSA METHODOLOGY AND APPROACH

2.1 NATIONAL CAPACITY SELF-ASSESSMENT (NCSA)

Tonga joined other developing countries in carrying out the NCSA. Prior to formal project inception Tonga participated in a training activity organized by the NCSA Pacific Regional Support Mechanism to familiarize the nations involved with the requirements of the NCSA and methodology proposed. The NCSA project required countries to go through a 4-step process presented in Box 1 below;

Box 1 – The NCSA Process

Main steps	Main activities carried out.
Inception	Establishing the project management unit, obtaining high-level support, raising awareness, holding an inception workshop for stakeholder representatives and running training activities.
Stock-take	Identifying priority climate change problems, doing an inventory of past and current capacity building activities to address climate change issues, related convention requirements and identify gaps.
Thematic Assessment	Use the gaps from the stock-take exercise and assess their root causes or capacity issues.
Cross-cutting Assessment	Identify cross-cutting environmental and capacity issues and how they are or can be addressed at the national level
Capacity Action Plan	Develop an Action Plan for addressing priority capacity needs within the thematic area as well as the cross-cutting issues.

Although optional, the Government of Tonga saw it necessary and essential to develop an Action Plan that can be used to plan, guide and monitor the implementation of priority capacity development activities.

The NCSA aims at identifying and characterizing critical capacity constraints relevant to effective environmental management in Tonga and defines national capacity needs and priorities. The preparation of the NCSA Report necessitated the formation of the Climate Change Technical Working Group (TWG) which consisted of national experts from a wide range of stakeholders including the NGO sector. Following an inception workshop, consultations were carried out through workshops and one-to-one interviews. A comprehensive literature review was also undertaken. The stock-take work was able

to utilize information from other national consultation exercises notably the Stock-taking for the 2nd National Communication and information from the Initial National Communications. The approved National Climate Change Policy Framework provided a good guide to determining the climate change problems and objectives.

The stocktaking exercise and the thematic assessment were conducted in accordance with methodologies and guidelines provided in the UNDP NCSA Tool Kit and made available through the NCSA Pacific Regional Support Mechanism. The stock take involved two components;

- Component 1 - Defining and identifying the climate change issues and problems and linking them to obligations of Tonga under the UNFCCC.
- Component 2 - Preparation of an inventory of UNFCCC related activities that are currently in place.

The stock-take identified past and current efforts to address issues and the gaps in implementation of convention requirements. The thematic assessments followed and identified and prioritized the underlying root causes of these capacity gaps that are also the priority capacity development needs of the country. A range of tools were utilized throughout this process including, inter-alia; Stakeholder Analysis, Semi-structured questionnaires, SWOT Analysis, Problem Tree, Objective Tree and a Prioritization Matrix.

Priorities were determined on the basis of; scale of the problem, level of concern, and Tonga's ability to adequately address the issue.

Throughout the thematic assessment process capacity development constraints and needs were assessed at three different levels:

a. The ***Systemic level*** emphasized the overall policy framework in which individuals and organizations operate and interact with the external environment, as well as the formal and informal relationships of institutions
b. The ***Institutional level*** focused on the overall organizational performance and functioning capabilities, as well as the ability of an organization to adapt to change
c. The ***Individual level*** focused on the process of changing attitudes and behaviours, imparting knowledge and developing skills while maximizing the benefits of participation, knowledge exchange and ownership

3.0 FINDINGS FROM THE STOCKTAKING EXERCISE

3.1 TONGA'S OBLIGATIONS UNDER THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The obligations outlined below reflect the object and spirit of the Convention on Climate Change that Tonga must adhere to.

3.1.1 Prepare national communications:

- To develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties: Art 4(1) (a).
- To communicate to the Conference of the Parties, through the secretariat:

  - a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, to the extent its capacities permit, using comparable methodologies to be promoted and agreed upon by the Conference of the Parties: Art 12(1)(a);
  - a general description of steps taken or envisaged by the Party to implement the Convention: Art 12(1)(b); and
  - any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication, including, if feasible, material relevant for calculations of global emission trends: Art 12(1) (c).

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3.1.2 Develop national and regional climate change programmes:

- To Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change: Art 4(1)(b).

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3.1.3 Promote sustainable management, conservation and enhancement:

- To promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems: Art 4(1)(d).

3.1.4 Develop and implement adaptation plans and measures:

- To cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture,

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and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods: Art 4(1)(e).

3.1.5 Assess mitigation options:

- To take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change: Art 4(1) (f).

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3.1.6 Research and systematic observation of climate and other functions:

- To promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies: Art 4(1) (g).

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- To support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort: Art 5(a).
- To support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction: Art 5(b).
- To take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts Art 5(a) and (b): Art 5(c).

3.1.7 Education, training and public awareness:

- To promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations: Art 4(1) (i).

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- To promote and facilitate at the national and, as appropriate, sub regional and regional levels, and in accordance with national laws and regulations, and within their respective capacities:
  - the development and implementation of educational and public awareness programmes on climate change and its effects: Art 6(a)(i);
  - public access to information on climate change and its effects: Art 6(a)(ii);
  - public participation in addressing climate change and its effects and developing adequate responses: Art 6(a)(iii); and
  - training of scientific, technical and managerial personnel: Art 6(a) (iv).
- To cooperate in and promote, at the international level, and, where appropriate, using existing bodies:

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- the development and exchange of educational and public awareness material on climate change and its effects: Art 6(b)(i); and
- - the development and implementation of education and training programmes, including the strengthening of national institutions and the exchange of personnel to train experts in this field, in particular for developing countries: Art 6(b)(ii).

3.1.8 Information and networking

- To promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies: Art 4(1) (h).
- To communicate to the Conference of the Parties information related to implementation, in accordance with Article 12: Art 4(1) (j).

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3.1.9 Miscellaneous:

- To give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the 15 specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on small island countries, countries with low-lying coastal areas, countries with arid and semi-arid areas, forested areas and areas liable to forest decay, countries with areas prone to natural disasters, countries with areas liable to drought and desertification, countries with areas of high urban atmospheric pollution, countries with areas with fragile ecosystems, including mountainous ecosystems, countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products, and land-locked and transit countries: Art 4(8).
- To take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change: Art 4(10).

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3.2 TONGA'S EFFORTS TO ADDRESS CLIMATE CHANGE AND IMPLEMENT INITIATIVES REQUIRED UNDER THE UNFCCC

3.2.1 Climate Change Enabling Activity Project (CCEAP)

This project was financed by the GEF/UNDP. In July 10, 2001, His Majesty's (HM) Cabinet approved the project, Department of Environment as the National Executive Agency as well as the establishment of the project's implementation committees/groups (National Coordinating Committee, Technical Working Group and Management Unit.

The objectives, outputs, activities and status of implementation of the project are highlighted in Table 1.

Table 1: Objectives, outputs, activities and implementation status of the CCEAP, Tonga.

Objective (s)	Output	Activity	Implementation status
1. Undertake National Greenhouse Gas Inventory (GHGI)	- completed National GHGI report	- conduct GHGI workshop - prepare GHGI draft - circulate GHGI draft for comments - finalise GHGI report	- GHGI report completed and approved by HM Cabinet
2.Prepare strategies to mitigate GHG emission , Tonga	- strategies to mitigate GHG emissions, Tonga	- conduct mitigation workshop - prepare strategies to mitigate GHG emissions, Tonga - circulate for comments - finalise strategies	- strategies to mitigate GHG emissions, Tonga completed and approved by HM Cabinet
3. Assess the adverse effects of climate change in various sectors identified, Tonga	- vulnerability assessment report	- conduct vulnerability workshop - conduct vulnerability assessment on Agriculture, Forestry, Fisheries, Water Resources, Coastal Areas, Health - prepare vulnerability assessment report - circulate for comments - finalise vulnerability assessment report	- vulnerability assessment report completed and approved by HM Cabinet
4. Prepare adaptation strategies, Tonga	- adaptation strategies	- prepare adaptation strategies - conduct adaptation workshop - insert comments finalise adaptation strategies	- adaptation strategies completed and approved by HM Cabinet
5. Prepare National Action Plan (NAP) for effective response measures to climate change, Tonga	- Tonga's NAP for effective response to climate change	- prepare NAP - conduct workshop - finalise NAP	- NAP completely prepared and approved by HM Cabinet
6. Prepare Tonga's First National Communication (NC) to the UNFCCC secretariat & COPs	- Tonga's First National Communication	- conduct workshops and present draft National Communication - circulate draft NC for comments	- Tonga's First NC completed and approved by HM Cabinet - Tonga's First NC report approved by UNFCCC

		- insert additional comments into report - finalise report - publish report - submit to Cabinet - submit to UNFCCC secretariat - submit to COPS	secretariat - Tonga's First NC submitted to 11th COPS, Montreal, CANADA, December 2005.

3.2.2 Prepare National Communication

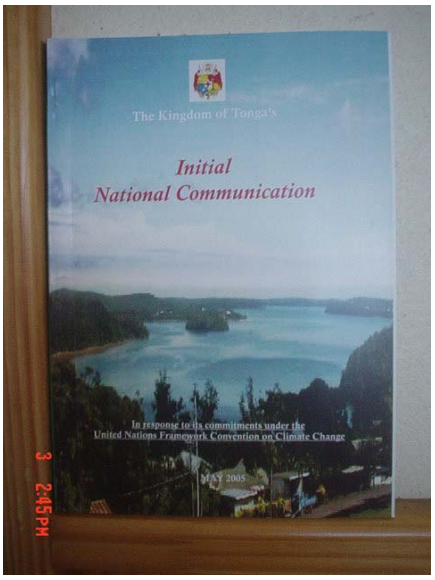


Plate 1: Tonga's Initial National Communication on Climate Change, 2005

The Tonga's Initial National Communication report on Climate Change (Plate 1) was prepared by the Technical Working Group and Management Unit with assistance from the Director of the Environment, international consultants and the rest of the project implementation committees.

The report was approved by HM Cabinet, Tonga (May 2005) and the secretariat of the UNFCCC, Bonn, GERMANY (21 July 2005). It was also submitted to the Eleventh Conference of the Parties to the UNFCCC held in Montreal, CANADA, December 2005. The report was also posted into the UNFCCC website. Preparation of this report was financed by GEF, implemented by one of its implementing agencies, the UNDP, and nationally executed by the Department of Environment, TONGA.

The Initial National Communication consisted of the following main chapters in compliance with Articles 4 & 12 of the UNFCCC*;*

- A national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol;
- Vulnerability Assessment;
- Adaptation measures;
- General description of steps taken to implement the UNFCCC;
- National Policy and Actions to mitigate GHG emissions and adequately adapt to climate change impacts.

3.2.3 Prepare National Greenhouse Inventory of Anthropogenic Emissions by Sources and Removals by Sinks, Tonga.

Table 2: The Kingdom of Tonga's Initial National Greenhouse Gas Inventories of Anthropogenic Emissions by Sources and Removals by Sinks of All Greenhouse Gases not controlled by the Montreal Protocol Year 1994.

Greenhouse Gas Source & Sink Categories Total (Net) National Emissions (Gigagrams per year)	**CO_2 Emissions 365.59**	**CO_2 Removals -595.24**	**CH_4 5.04**	**N_2O 0.14**	**NO_x 0.49**	**CO 3.82**	**NMVOC 0.65**
1. ALL ENERGY	79.98		**0.01**		**0.49**	**3.49**	**0.65**
Fuel Combustion							
Energy and Transformation Industries	22.40				0.07	0.01	
Manufacturing Industries and Construction	2.39				0.01		
Transport	46.28		0.01		0.41	3.48	0.65
Commercial – Institutional	0.15						
Residential	3.60						
Agriculture, Forestry & Fishing	2.52						
Other	2.64						
2. AGRICULTURE			**2.35**	**0.04**		**0.33**	
Enteric Fermentation			2.33				
Leaching from Agricultural Soils				0.02			
Cultivation of Histosols				0.01			
Emissions from Agricultural Fields				0.01			
Prescribed burning of savannas			0.01			0.18	
Field Burning of Agricultural Residues			0.01			0.15	
3.LAND USE CHANGE & FORESTRY	**285.61**	**-595.24**					
Changes in Forest and Other woody Biomass		-77.57					
Forest and Grassland Conversion	280.11						
Abandonment of Managed Lands		-517.67					
Carbon Emissions from Agriculturally Impacted Soils	5.50						
4. WASTE			**2.68**	**0.10**			
Solid Waste Disposal on Land			0.80				
Liquid Industrial Waste Water and Sludge Domestic and Commercial Waste Water			 1.67 0.21				
Human Sewage				0.10			

Tonga undertook the inventory of its anthropogenic emissions by sources and removals by sinks of greenhouse gases that are not controlled by the Montreal Protocol in accordance with Articles 4 and 12 under the UNFCCC.

The reference year for Tonga's inventory was 1994. Carbon dioxide, methane and nitrous oxide were the major greenhouse gases identified in the inventory. Tropospheric ozone precursors including nitrogen oxides, carbon monoxide and non-methane volatile organic compounds were also estimated. The emission from the international bunkers was excluded from the national totals as required by the IPCC Guidelines.

The national greenhouse gas inventory was undertaken on an individual sector basis for the Energy, Agriculture, Forestry and Waste Sectors.

Results are summarized in Table 2

3.2.4 Assess Mitigation Options, Tonga.

There were potential options/measures identified in the Tonga's Initial National Communication to mitigate the concentrations of the emissions of greenhouse gases from the Energy, Forestry, Agriculture and Waste Sectors. Options are outlined in Table 3.

Table 3: Potential Options to mitigate the GHG emissions, Tonga

Sector	Mitigation Strategies
ENERGY	*Demand Side Management* (a) Energy efficiency labelling - Large programmes are required to be set up. - Programmes will require reliable information and enforcement. (b) Energy efficiency standards - Focus on lighting, refrigerators, freezers and air conditioners. - Must be supported by labelling scheme. (c) Training & education programmes - Focus on lighting, refrigerators, freezers and air conditioners - Programme must aim at: correct installation and cleaning; controls to reduce operation while not in use; and choice of correct appliances. (d) Ground transport - Fiscal actions: discourage large engine and low efficiency cars, impose high taxes on large engine vehicles, tax company cars, reduce duty on spares, and high fuel taxes. - Encourage emission & standards testing. - Educational programmes on maintenance and driving techniques. - Road improvements and maintenance. - Traffic management improvement. *Supply Side Management* - Increase efficiency in existing systems, particularly power generation and distribution systems through technology shifts. - Biomass for domestic uses. - Increased utilization of renewable energy technologies such as photovoltaic, solar water heaters and wind generators to meet domestic demands for electricity and water heating.

	Fuel Substitution - Assess the viability of cleaner fossil fuel. - Assess the viability of using copra oil, fuel cells.
FORESTRY	- Inland and coastal revegetation - Promote agroforestry
AGRICULTURE	- Reduced Amount of N Recycled by the Grazing Animal - Increased Efficiency of N Recycled by the Grazing Animals - Increased Efficiency of N from Synthetic Fertilisers - Ionophores - Improved Forage/Feed Quality - Reducing Livestock Numbers
WASTE	**Solid Waste** - Minimisation Programme - Home composting of domestic degradable organic wastes - Recycling programme - Waste sorting - Awareness Programme - Composting toilets

3.2.5 Vulnerability and Adaptation Assessment

The assessment of the vulnerabilities of Tonga to the adverse effects of climate change, climate variability and sea level changes was undertaken in the Initial National Communication. In addition, the vulnerability assessment was conducted to examine the degree of the current and future risks induced by climate and sea level changes on the vulnerable sectors in Tonga. Sectors concerned include Coastal Areas, Water Resources, Fisheries, Agriculture, Forestry and Human Health.

Further, strategies for each sector were formulated to reduce Tonga's vulnerabilities and also facilitate the adequate adaptation of Tonga and its environment to the detrimental impacts of climate change, variability and sea level changes. These are outlined in Table 4.

Table 4: Adaptation strategies for vulnerable sectors identified

Sector	Adaptation strategies
COASTAL AREAS	- Coastal protection systems (foreshore protection infrastructure) - Coastal replanting - Eliminate onshore sand mining - Review and assess the current coastal protection system - Promote public awareness - Review/amend the existing legislation - Law enforcement
FISHERIES	- Develop legal framework and incorporate climate change phenomenon - Promote public awareness - Review /amend existing legislation
AGRICULTURE	- Introduce salt and temperature tolerant crops - Improve disease and pest management - Restoration of degraded lands - Farm relocation - Agricultural diversification - Promote public awareness
FORESTRY	- Promotion of agroforestry practices - Inland reforestation and afforestation - Review the existing Land use policy - Review existing Forestry legislations and regulations - Promote public awareness
WATER RESOURCES	- Demand management measures - Expand of water collection schemes - Ground water protection measures - Desalinisation - Promote public awareness
HEALTH	- Research on climatic impacts on health - Strengthen data collection system - Promote public awareness - Improve technical capability conduct vulnerability assessments and plan adaptation activities.

3.2.6 Systematic observation

Tonga's meteorological office handles the systematic collection of meteorological data for the island, providing weather related information for the aviation, shipping purposes and also providing weather forecasts to the general public. It is also the official source of information on cyclonic events during the hurricane season. In this regard, it is a critical component of the national emergency management system. In addition, the meteorological office also collects data on a number of climatic parameters such as rainfall, temperature, atmospheric pressure and wind speed and direction. These climatic records date back to 1945. Recently the work of the office had been assisted by the installation of a tidal gauge, which monitors, *inter alia*, air temperature, tidal data, wind speed and wind direction.

3.2.7 Education, Training and Public Awareness

There were various training, educational and public awareness programmes conducted during the preparation of Tonga's Initial National Communication.

3.2.7.1 Training of National Experts

International consultants were contracted by the Department of Environment to train the project's hired local experts on how to prepare and conduct greenhouse gas inventory, vulnerability assessment, mitigation & adaptation as well as on the preparation of Tonga's First National Communication (Plates 2-4)

Plate 2: V&A assessment Training for the TWG and PMU of project

Plate 3: Mitigation Training for TWG and MU of project

Plate 4: National Communication Training for TWG and PMU of project

National workshops were conducted for the project stakeholders including line government ministries, NGOs, private sectors, academics, teachers from all levels of education and major districts of the three major island groups in Tonga.

Plate 5: Workshop, Tongatapu

Plate 6: Workshop, Vavau

Plate 7: Workshop, Ha'apai

Table 5: National Workshops conducted in Tongatapu, Vava'u & Ha'apai.

Division	Districts	Villages	Total number of workshops conducted	Facilitators /Participants
1. Tongatapu	- Kolofo'ou - Kolomotu'a - Vaini - Tatakamotonga - Lapaha - Nukunuku - Kolovai	- 12 villages - 6 villages - 9 villages - 9 villages - 12 villages - 10 villages - 12 villages	7 district workshops + 1 workshop with Stakeholders from government Ministries, NGOs, academics	– Director of Environment – Technical Working Group – Project Management Unit – NCC members – government ministries – NGOs – Private sectors – Academics – Teachers (Primary, Secondary & Tertiary Education) – District Officers – Town Officers – Representatives from villages
2. Vava'u	- Neiafu - Pangaimotu - Hahake - Leimatua - Hihifo - Motu	- 10 village - Villages - 8 villages - 4 villages - 5 villages - 11 villages	6 district workshops +1 workshop with school teachers	
3. Ha'apai	- Pangai - Foa - Ha'ano	- 4 villages - 6 villages - 1 village	3 district workshops + 2 workshops with teachers	
			20 workshops	

3.2.7.2 School Visitation

Government and church schools were visited in Tongatapu, Vava'u & Ha'apai. These school visitations were carried out by the Technical Working Group and the Management Unit of the project.

Plate 8: Visit to Ha'apai High School

Plate 9: Visit to Saineha High School, Vava'u

Plate 10 : Visit to Tupou High School, Tongatapu.

Table 6 : Schools visited in Tongatapu, Vava'u & Ha'apai.

Major island group	Name of school visited	Total number of schools visited
1. Tongatapu	– Tonga Teacher's Training Institute – Tonga High School – Tonga College – Queen Salote College – Tupou College – Tupou High School – 'Apifo'ou College – Takuilau College – Tailulu College – St. Andrew's High School – Liahona High School	11
2. Vava'u	– Vava'u High School – Chanel High School – Saineha High School – Tailulu College – Mailefihi/Siulikutapu College	5
3. Ha'apai	– Ha'apai High School – Taufa'ahau/Pilolevu College – LDS School – Tailulu College – Catholic School	5

3.2.7.3 Education

For educational purposes;

- the Resource Information Centre (ERIC) at the Department of Environment provided information on climate change for public use
- Climate change issues were integrated into the local school curriculum and also used as one of the major topics in students' research project as part of the school's internal assessment.

3.2.7.4 Communication and Awareness Mechanisms

Table 7 lists mechanisms used by the project to disseminate climate change information to project stakeholders and the public and to promote awareness of the information.

Table 7: Descriptions of communication and awareness mechanisms used by project.

Communication and Awareness Mechanisms	Descriptions
- Radio and television programmes	The Department of Environment conducts radio and television programmes fortnightly. CCEAP participates and sometimes the project held its own radio and TV programmes
- Establish Project's national website (http://www.tonfon.to/tccp) and database for public access to climate change information	CCEAP has established its database and national website. Tonga's First National Communication on climate change was posted into this website and database. Other climate change related data and information were also inserted into both database and website.
- The UNFCCC secretariat website (http://www.unfccc.int)	Tonga's Initial National Communication on climate change has been posted into this website together with other signatory parties to the convention.
- Awareness materials	Climate change awareness materials (reports, brochures, posters) were published and distributed to all project stakeholders.
- Drama competition	Drama competition for the national youths, secondary schools & colleges on the issues of climate change and its impacts, Tonga. Every year during the National Environment Week the project always funds and organizes drama competition for youths, secondary schools and colleges in Tongatapu.

3.2.8 Implementation of adaptation measures

Coastal erosion was evident in the village of Kanokupolu (village on the western side of Tongatapu) as reported in Tonga's Initial National Communication. Construction of a seawall and planting of mangroves (Plates 11&12) were implemented to overcome this problem. This work had been initiated by the Kanokupolu community. A replanting programme (Plate 13) was further conducted by the CCEAP to strengthen efforts done and also to minimize future coastal erosion and sea water intrusion in Kanokupolu and the adjacent villages.

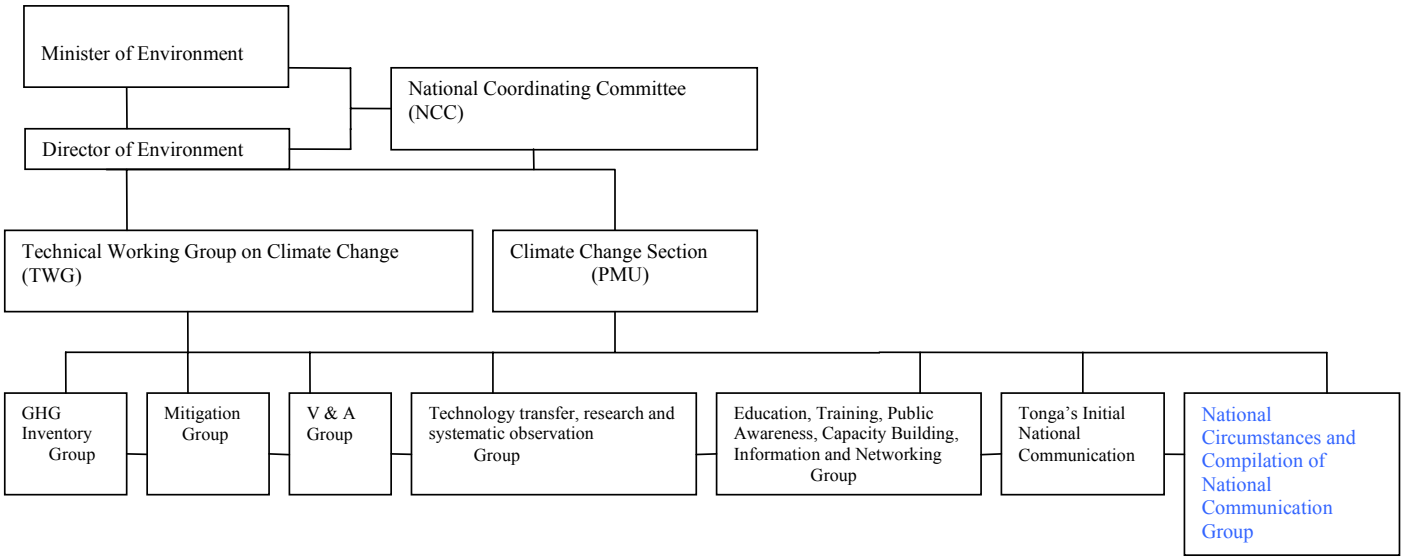
Plate 11 : Seawall, Kanokupolu village

Plate 12: Mangroves planted in front of seawall, Kanokupolu village

Plate 13: Casuarina trees planted as coastal strengthening project, Kanokupolu village

3.3 INSTITUTIONAL ARRANGEMENTS

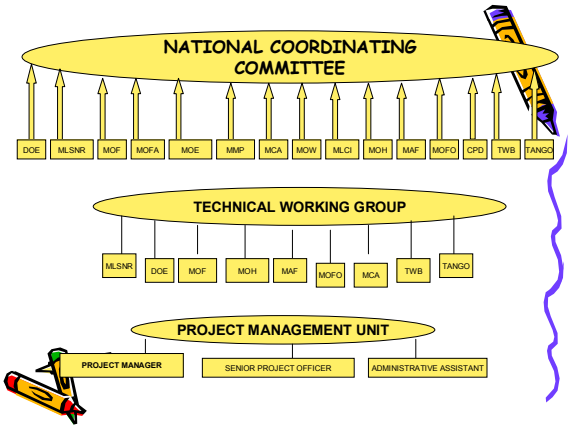
1.1 *DIAGRAM 1 ILLUSTRATES THE INSTITUTIONAL FRAMEWORK AND PROJECT MANAGEMENT STRUCTURE.*



(a) *National GEF Operational and Political Focal Points*

The Minister of Environment was officially designated as the GEF national Political focal point and the Director of Environment to be the national operational focal point for the CCEAP and other GEF funded projects, Tonga.

(b) *National Executive Agency and Project implementation committees* (Figure 1)



The Department of Environment was given the mandate to be the National Executive Agency for the project.. It worked together with the National Coordinating Committee to coordinate project work.

The National Coordinating Committee, the Technical Working Group and the Project Management Unit were also approved as the implementation committees/groups for the aforesaid project. Members are detailed in Figure 3.

The National Coordinating Committee consisted of 14 Departmental heads from government agencies, NGOs and statutory board and was chaired by the Director of Environment. This committee was established to function as the

advisory body of the project. It also served as the venue to ensure coordination and discussion of climate change issues at the policy level.

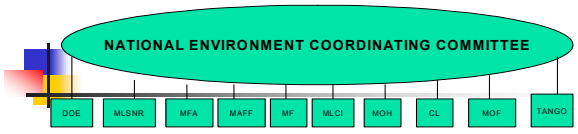
The Technical Working Group was established and its general role was to ascertain that the project was properly implemented at the technical level. This group was composed of 11 technical experts from various government ministries, departments, NGOs and statutory board. The roles of each technical expert/national consultant from respective Ministries/departments, NGO, statutory board are detailed in Table 8.

Table 8 : The Technical Working Group members, their specific roles

Project activities	TWG/ Ministries, NGOs, Statutory Board	Roles
- *GHG inventory Prepare inventory of GHG sources by emissions and sinks by removals from sectors identified	Energy consultant (Energy Planning Unit, Ministry of Lands, Survey & Natural Resources)	Prepare the inventory of GHG emission by sources and removal by sinks from Energy Sector
	Forestry consultant (Ministry of Forestry and Agriculture)	Prepare the inventory of GHG emission by sources and removal by sinks from the Forestry Sector
	Agriculture consultant (Ministry of Forestry and Agriculture)	Prepare the inventory of GHG emission by sources and removal by sinks from the Agricultural Sector
	Waste consultant (Department of Environment)	Prepare the inventory of GHG emission by sources and removal by sinks from the Waste Sector
- Mitigation Options From the results of GHGI assess the potential options that mitigate the concentrations of GHG emissions from the sectors identified	Energy consultant (Energy Planning Unit, Ministry of Lands, Survey & Natural Resources)	From the GHGI results under the Energy Sector, assess options that would mitigate GHG emissions from it
	Forestry consultant (Ministry of Forestry and Agriculture)	From the GHGI results under the Forestry Sector, assess options that would mitigate GHG emissions from it
	Agriculture consultant (Ministry of Forestry and Agriculture)	From the GHGI results under the Agricultural Sector, assess options that would mitigate GHG emissions from it
	Waste consultant (Department of Environment)	From the GHGI results under the Agricultural Sector, assess options that would mitigate GHG emissions from it
- **Vulnerability Assessment** Assess the adverse impacts of climate change, variability and sea level rise on sectors	Coastal consultant (Geology Unit, Ministry of Lands, Survey & Natural Resources)	Assess the impacts of climate change, variability and sea level rise on coastal areas
	Water Resources consultants (Geology Unit, Ministry of Lands, Survey & Natural Resources and Tonga Water Board)	Assess the impacts of climate change, variability and sea level rise on water resources on Rural, Urban Areas and Outer Island

concerned	Fisheries consultant (Ministry of Fisheries)	Assess the impacts of climate change, variability and sea level rise on Fisheries
	Human Health consultant (Ministry of Health)	Assess the impacts of climate change, variability and sea level rise on Human Health
- Adaptation Assessment From the Vulnerability Assessment develop adaptation strategies for the sectors identified	Coastal consultant (Geology Unit, Ministry of Lands, Survey & Natural Resources)	Develop adaptation strategies for Coastal areas
	Water resources consultant (Geology Unit, Ministry of Lands, Survey & Natural Resources and Tonga Water Board)	Develop adaptation strategies for Water Resources
	Fisheries consultant (Ministry of Fisheries)	Develop adaptation strategies for Fisheries
	Human Health consultant (Ministry of Health)	Develop adaptation strategies for Human health
- **National Responses** to Climate Change, variability and sea level rise	TWG and PMU (members approved by HM Cabinet)	Based on GHG inventory, mitigation, vulnerability and adaptation assessment findings, formulate national responses to climate change, variability and sea level rise.
- **Historical climatic data and future climate change scenarios**	Meteorological consultant (Tonga Meteorological Service, Ministry of Civil Aviation)	Prepare historical climatic data and develop climate scenarios for assessing climate change, variability and sea level rise impacts on sectors identified, Tonga
1. Climate change Awareness Programmes	Climate Change Awareness consultant (Tonga Association of Non-Government Organisation), TWG and PMU	Develop climate change (cc) awareness materials and conduct cc awareness programmes throughout, Tonga
- **Tonga's Initial National Communication (INC) on Climate Change under the UNFCCC**	TWG, PMU and implementation committee members of project to prepare Tonga's INC	Follow the IPCC Guidelines in preparing Tonga's INC.

Figure 4: National Environment Coordinating Committee with its members



DOE	Department of Environment
MLSNR	Ministry of Lands, Survey & Natural Resources
MFA	Ministry of Foreign Affairs
MAFF	Ministry of Agriculture, Food and Forestry
MF	Ministry of Finance
MLCI	Ministry of Labor, Commerce & Industries
CL	Crown Law
MOF	Ministry of Fisheries
TANGO	Tonga Association of Non-government Organisations

The Project Management Unit was responsible for the overall management of the project. It was made up of the Project Manager, Senior Project Officer and the administrative assistant.

The establishment of the National Environment Coordinating Committee (Figure 4) was approved by

Cabinet, January 2004 to replace all the existing NCCs. Its role is to coordinate all existing and future donor projects approved by Cabinet to be executed by DOE.

3.4 PARTICIPATION AND COLLABORATION IN REGIONAL AND INTERNATIONAL PROGRAMMES

There were climate related programmes implemented at the regional and international level in which Tonga took part. (Table 9)

Table 9 : Name (s) of Regional, International and other national projects related to climate change

Regional /International Projects	***Descriptions***
1. The Australian Funded Sea level Rise & Climate Monitoring Project	- Tide gauge was installed at the Queen Salote Wharf, Nuku'alofa in Year 1993 to measure the sea level rise, TONGA.
2. The PICCAP (Pacific Island Climate Change Assistance Programme)	- Ten Pacific Island Countries (PICs) participated in the PICCAP. Tonga was not part of this project but staff from the MLSNR participated in PICCAP training which indeed helped in the subsequent preparation of Tonga's Initial National Communication.
3. PIREP (Pacific Islands Renewable Energy Project)	- This project dealt with the identification of barriers for the utilisation of RE in PICS. - Findings from the PIREP were used in preparing proposal for PIGGAREP (Pacific Islands Greenhouse Gas Abatement & Renewable Energy Project).
4. Pacific Islands Global Climate Observing System (PI-GCOS)	- This project intends to strengthen the meteorological and climatological capacities to plan and respond to climate variability and extreme weather events.
5. Phase Two of the Enabling Activity Project	- Project was approved by the Global Environment Facility/UNDP in Year 2003. Additionally, this project would enable Tonga to utilize the approved funds to expedite financing of measures for capacity building in priority areas including: (a) the identification and submission of technology needs and capacity building to assess technology needs, modalities to acquire and absorb them; (b) capacity building for participation in systematic observation systems; (c) studies leading to the preparation of programmes to address climate change; and improvement of emission factors.
6. Second National Communication	2. The preparation of Tonga's Second National Communication on Climate Change has started. The international consultant and the climate change project team undertook the stocktaking exercise in May 2006. Findings from this exercise are being used to prepare proposal for the Second National Communication, Tonga.
Name of other climate change related programmes implemented at the national level	- ***Descriptions***
1. National Foreshore Protection Programme (Nuku'alofa)	- The foreshore was constructed as protection against future erosion and salt water intrusion to Nuku'alofa areas. This project was funded by the Government of Japan and the Government of Tonga.
2. Coastal Protection, Houma village	- Coastal trees were replanted at Houma village, Western district, TONGATAPU as protection from salt water spray and impacts of climate change along the coast of Houma. This project was financed by SPREP and executed in Tonga by the Ministry of Forestry.
3. Ha'apai Conservation Area, Project	- Coastal trees were replanted in Lifuka island and the remote islands of HA'APAI

4. Tonga Environmental Planning & Management Project	- One of the activities of this project is the replanting of mangroves & coastal trees, TONGATAPU. This project was funded by the Government of Australia.
5. Agroforestry Project	- Medicinal, cultural & native plants were replanted in tax allotments, TONGA

3.5 NATIONAL POLICIES AND STRATEGIC DEVELOPMENT PLANNING

These national policies highlighted hereunder were relevant for implementing the obligations under the UNFCCC.

3.5.1 National Climate Change Policy

The Cabinet of January 2006 approved the National Climate Change Framework and Policy. Recommendations from the Initial National Communication were used to formulate this Policy.

This policy will be a major step forward in addressing the impacts of climate change, climate variability and sea level changes in the Kingdom. It will also serve to define the position of the government and stakeholders on the issues of climate change, climate variability and sea level changes and define the direction and responsibilities of each stakeholder in the short and long term.

This Policy consists of six objectives with strategies for each objective (Table10)

Table 10: National Climate Change Policy

Objective 1 To amend the existing framework or to endorse the proposed climate change framework.	**Strategies** Legislation to be formulated ruling that all specific climate change related issues concerning climate change mitigation, adaptation, and vulnerability assessment fall under the auspices of the Department of Environment. The Department of Environment to amend, strengthen and fill in the gaps in legislation whereby mandate over the issue cannot be obtained.
Objective 2 To mainstream climate change issues into all environmental, social and economic processes including enactment and amending existing legislations.	2.1 Strengthen networking capacity of Government, Non-Government, and private sectors in the implementation of climate change policy /initiatives. Establish a National climate change team from all relevant sectors and stakeholders to oversee and monitor progress. (a) Responsible for mainstreaming climate change issues into their respective ministries, departments and organisations. (b) Ensure that relevant acts and regulations are reviewed and responses strengthened across all relevant sectors. 2.3 Establish village committees composed of town officers with members from the community working closely with the national climate change team. This will generate the necessary grassroots interest.
Objective 3 To improve and strengthen the collection, storage, management, analysis and use of data (including Greenhouse gases, vulnerability & climate data) to monitor climate, sea level change and their effects.	3.1 To review existing data, data collection and development of an integrated approach for data aggregation and mechanisms for sharing with private and public sector agencies. 3.2 To seek technical assistance from relevant regional and international agencies in carrying out research, collection, and bringing up to date of data.

	3.3 To build both human and technical capacity for management and storage of climate related data. 3.4 Train and draw on local personnel whose knowledge of the area will be of utmost value. 3.5 Establish a national database to avoid duplication of information and for better security and access.
Objective 4 To promote the raising of awareness and understanding of climate change, variability and sea level changes, mitigation, vulnerability and adaptation responses.	4.1 Increase technical capability to address and promote climate change issues. 4.2 Frequently promote and host climate change awareness programmes, trainings and workshops. 4.3 Develop effective communication mechanisms and strengthen partnerships through the establishment of village committees to raise awareness at the community level. 4.4 Integrate climate change programmes into school curriculum. 4.5 Seek funding to carry out all the above activities.
Objective 5 To protect the populations, resources and assets, vulnerable areas at risk from climate change impacts.	5.1 Identify vulnerable areas and develop adaptation options that are cost effective and culturally sensitive to reduce vulnerabilities (foreshore construction, tree planting). 5.2 Extensive consultation and cooperation amongst government ministries, local communities and all relevant stakeholders in prioritizing adaptation options that can be implemented to reduce vulnerability. 5.3 Encourage the participation of communities in the planning, management and implementation of adaptation measures within their communities. 5.4 Enforce and enact new regulations to support the building code and all other relevant provisions prohibiting sand removal, mangrove cutting, smoking vehicles and free ranging animals. 5.5 Investigate alternative sites for possible relocation of settlements from low lying vulnerable areas.
Objective 6 To mitigate the causes of human induced climate change.	6.1 To identify and measure levels of different sources of Greenhouse gas emissions in the Kingdom (Energy, Agriculture, Waste, Forestry) 6.2 To formulate and implement programmes to reduce Greenhouse gas emissions (encourage tree planting, promote usage of renewable energy resources, cleaner vehicles, waste generation and combustion) 6.3 Enact and enforce regulations to prohibit human activities that are detrimental to the environment (sand removal, deforestation, burning of solid waste, below par vehicles)

3.5.2 National Strategic Development Plan 8 (2006/07-2008/09)

The Development Vision of the National Strategic Development Plan 8 is to create a society in which all Tongans enjoy higher living standards and a better quality of life through good governance, equitable and environmentally sustainable private sector led economic growth, improved education and health standards and cultural development.

SDP8 has 8 goals and Goal 7 ensures environmental sustainability and disaster risk reduction. Under Goal 7 there are three key strategies;

Strategy 1: Complete and enforce the legislative framework for environmental conservation and management

Strategy 2: Integrate environmental costs and benefits into government decision making procedures covering policies, projects ad private investment proposals

Strategy 3: Implement environmental education programmes and engage communities in remedial measures

3.5.3 The Department of Environment Cooperate Plan (2006-2008)

The Department of Environment has prepared its own Cooperate Plan. The purpose of this Plan is to outline the programmes and objectives of the Department of Environment in addressing the Government's National Development Priorities.

The Department's vision is that the people of Tonga are better able to plan and manage the use of their environment for sustainable development for present and future generations.

The Department's mission is to coordinate environmental activities and promote cooperation within the Kingdom of Tonga to effectively manage the environment, and to ensure sustainable development.

UNFCCC was highlighted in Objective 4 of the Plan.

3.5.4 Tonga's National Assessment Report to the Barbados Programme of Action (2004)

This report highlighted national projects implemented to address climate issues, national programmes and progress in relation to climate change and also capacity constraints and needs.

3.5.5 Tonga's National Assessment Report for the World Summit on Sustainable Development, Johannesburg 2002

This National Report which was prepared by the Department of Environment highlighted climate change issues, activities, capacity constraints and capacity building needs.

3.6 REGIONAL PLANNING UNDER THE UNFCCC

The Pacific Islands Framework for Action on Climate Change 2006-2015 is a regional plan formulated to be established at the national level to coordinate and guide the planning, implementation, monitoring of country commitments and actions.

3.7 LEGAL AND REGULATORY FRAMEWORK

There is no climate change specific legislation currently in place. Mandates for the existing legislations with provisions related to climate issues are fragmented among government Ministries, departments and statutory board (Table 11)

Table 11: Institutions with legislations and provisions relevance to climate change.

Institution	Legislation	Responsibility
Ministry of Lands, Survey & Natural Resources	Land Act (1903) Parks and Reserves Act (1988) Land (Removal of Sand) Regulations (1936)	– development within the littoral zone – sets up Land and Marine Parks – prohibits taking of sand
Ministry of Health	Public Health Act – 29 of 1992	– Municipal solid waste management
Ministry of Agriculture & Forestry	Forests Act (1961) Pesticides Act (1981)	– regulates specific activities relating to agriculture
Ministry of Fisheries	Birds and Fish Preservation (Amendment) Act (1989) Fisheries Management Act (2002)	– removal of any mangroves – Conservation, management and development of marine living resources.
Department of Environment	Environmental Impact Assessment Act (2003)	– sustainable development
Tonga Water Board	Tonga Water Board Act (2000)	– regulation and control of water supplies

3.8 MONITORING AND EVALUATION

Procedures used by agencies of the project to assess performance were as follows;

3.8.1 Annual Tri-Partite Review (ATPR)

The ATPR is conducted every year. This is a joint meeting of representatives from government, NGOs, statutory board, the National Executive Agency and UNDP Review team. Performance of project officers are assessed and evaluated by these representatives.

3.8.2 NCC meetings

The Project Manager and the TWG periodically report to NCC on the progress of the project. Issues encountered during the implementation of the project are also reported for discussions by these members.

3.8.3 Quarterly reports submitted to UNDP

The Project Manager prepares and submits quarterly reports to the GEF/UNDP. These reports include project activities completed/ongoing and also expenses and balances at that particular quarter.

3.8.4 Audit of project yearly

The auditing of the project is conducted every year. Audit exercise assesses whether the project activities are effectively delivered and the expected output are achieved in a timely manner. It also assesses if GEF/UNDP funds are correctly used and properly managed for the implementation of project activities. The audit report is then forwarded to GEF/UNDP.

3.8.5 Weekly & monthly reports submitted to Director DoE & Public Service Commission

Weekly and monthly reports of the climate change section within the Department of Environment are submitted to Director of Environment and the Public Service Commission. These reports cover weekly and monthly activities that have been completed/ ongoing.

The Project Management Unit follows up with the project's relevant stakeholders to find out whether established climate change related activities are continually evaluated and monitored.

3.9 RESOURCES

The stocktaking of the availability of resources (human and financial) from relevant stakeholders of the projects was carried out. (Table 12)

Table 12: Project activities and resources utilised

Project Activities	Resources Utilised
1. Prepare national greenhouse gas inventory	Director of Environment, Deputy Director of Environment, Project Management Unit, National Experts (4) from government ministries and statutory board
2. Identify potential options to mitigate concentrations of GHG release, Tonga	Director of Environment, Deputy Director of Environment, Project Management Unit, National Experts (4) from government ministries and statutory board
3. Conduct vulnerability assessment in sectors identified, Tonga	Director of Environment, Deputy Director of Environment, Project Management Unit, National Experts (8) from government ministries and statutory board
4. Assess potential measures that facilitate adequate adaptation of Tonga and its environment to impacts of climate change, variability and sea level rise	Director of Environment, Deputy Director of Environment, Project Management Unit, National Experts (8) from government ministries and statutory board
5. Prepare national action plan	Director of Environment, Deputy Director of Environment, Project Management Unit, National Experts (10) from government ministries and statutory board
6. Prepare Tonga's First National Communication on Climate Change	Director of Environment, Deputy Director of Environment, Project Management Unit, National Experts (10) from government ministries and statutory board
7. Conduct climate change awareness programmes throughout Tonga	Director of Environment, Deputy Director of Environment, Project Management Unit, National Experts (10) from government ministries and statutory board & Tonga Association of Non-Government Organisation

The funds used by project activities were all from the project's donor. Skills required were principally negotiation skills, communication skills, computer literacy, fluency in written and spoken English, technical skills and report writing

4.0 THEMATIC ASSESMENT

The aim of the thematic assessment is to determine the national priority issues and show what the gaps and root causes of these gaps are, which would be the capacity development needs also. The gap analysis looks at the strengths and weaknesses in the government's existing functions and what is yet to be done or achieved by the nation to address the climate change issues and to better plan for the implementation of Tonga's obligations under the UNFCCC.

Consultations were carried out through workshops and one-to-one interviews to identify and prioritize the gaps. The first workshop involved the identification of gaps by identifying strengths and weaknesses in existing functions of the government. This was followed by another workshop and one-to-one interview to identify the key capacity constraints at the individual, institutional and systematic level, and also to identify and prioritise the capacity development needs of Tonga to adequately address the climate change challenges. A final workshop was conducted to explore and analyze the underlying root causes of the capacity gaps that are also the priority capacity development needs of the country. The cause and effect relationships were also identified. In addition, findings from the Stock-take of Tonga's obligations to the UNFCCC assisted with the gap assessment.

Tools that were utilized throughout this process included, inter-alia; Stakeholder Analysis, Semi-structured questionnaires, SWOT Analysis, Problem Tree, Objective Tree, Prioritization Matrix and a gap analysis checklist provided in the UNDP NCSA Tool Kit and made available through the NCSA Pacific Regional Support Mechanism.

4.1 SWOT ANALYSIS

The SWOT analysis was aimed at identifying the strengths, weaknesses, opportunities, and threats in coordinating and implementing Tonga's obligation to UNFCCC and in meeting and effectively addressing climate change challenges. SWOT also identified the gaps in the existing structures, policies, and functions of government agencies and relevant stakeholders. The SWOT was based on interpretation of findings from the stock-take which involved reviewing the obligations of Tonga under the UNFCCC and assessment of Convention related activities that are currently in place. A set of questions designed to elicit responses to key areas (listed below) was utilized for the purpose of this exercise.

Results of SWOT Analysis

- Institutional Arrangements
- Creating an enabling environment

- Education, awareness raising and capacity building
- Policies and Strategies
- Mitigation
- Adaptation
- Systematic Observation
- Monitoring and Evaluation
- Resources

4.1.1 Institutional arrangements

Tonga as a party to the UNFCCC realizes the need for timely and effective active action to implement its obligations to UNFCCC and address the problems of climate change. As an expression of its commitment to the issues associated to climate change, the Government of Tonga acceded to the UNFCCC. This commitment has been translated into action through the establishment of the National GEF Operation Focal Point, the NEA and the Project implementation committees. Tonga has proven it has sufficient capacity to ensure and implement its national commitment under the Convention by successfully completing its Initial National Communication report on Climate Change (May 2005) to comply with the Article (4) & (12) of the convention.

However, the preparation of the Initial National Communication revealed an inconsistency in participation which led to a lack in contributions towards meeting the obligations under the UNFCCC. The existing descriptions of roles and responsibilities within the organizations and the inactive contribution of the NECC meant that climate change issues are not a priority. There is widespread lack of awareness and realization of the UNFCCC and its objectives. This ignorance of the UNFCCC spans from individuals to decision makers and consequentially, there is no commitment in the government level to implement the provisions contained within the convention.

There is a threat that donor countries may focus attention on other countries which have more commitment. The issues and effects of climate change are long term therefore government should take into consideration the socio-economic gains that can be achieved from implementation of the UNFCCC. Much of the country's scant resources are used for socio-economic development, very little is available for addressing climate change and global warming issues. However, ignoring the detrimental effects of climate change and global warming will lead to greater cost and dire prospects for the country in the future.

4.1.2 Creating an enabling environment

Climate change knows no border. It impacts every country and is an issue that must be addressed globally as it affects all corners of the world. Human activities are contributing to global carbon concentrations in the atmosphere and affecting the nature of the global environment which affects us in different ways. Therefore there is an urgent need for Tonga to realize its obligations to the UNFCCC.

The implementation of the climate change enabling activity project is among Tonga's responses to its obligations to the UNFCCC as stated in Article 4(1) (f) of the Conventions. The NCC and TWG prepared the Greenhouse Gas Inventory, Mitigation, Vulnerability, Adaptation, National Response and the Tonga's Initial National Communication Report.

There is no climate change division established as yet at the DOE. Even though there are committees and working groups established, they are only active during the duration of the projects they are attached to. (Project staff are employed temporarily only for the duration of the project.) The inactive commitment of the NECC reflects the fact that the CC issue is not a priority. This shows no commitment and coordination. Reports of minutes and follow up actions recommended at meetings were not carried out effectively to fulfil the Convention obligations. There was a failure to employ appropriate methods for impact assessment formulated and determined nationally to minimize effects of CC on economy, public health, quality of environment. They also lacked in follow up of projects and measures taken to mitigate or adapt to CC.

4.1.3 Education, awareness raising and capacity building

To promote and cooperate in education, training and public awareness related to CC and encourage the widest participation in this process including that of NGOs, Article 4(1) (i). The UNFCCC consists of a number of commitments to increasing public awareness and yet the lack of public awareness on CC issues is still one of the greatest threats to provisions on the incentive mechanisms of the Convention and to minimizing the effects of CC. Such mechanisms have only recently come into force and there have been few initiatives. There is a need to ensure mobilization of resources around the awareness of stakeholders.

The Convention consists of commitments to increasing public awareness and exchanging of information among stakeholders and government agencies. However, during the exercise some of the awareness programmes did not reach all communities and relevant stakeholders. At the national level, the availability and getting the CC information across to outer islands through the television (limited to Tongatapu and 'Eua only) and radio was an excellent way of disseminating the information during the activities carried out in the Initial Communication preparation. Some groups were overlooked at the local community level including women's groups and some youth groups. There is a need to integrate Climate Change issues into the school syllabus at the tertiary level to improve environmental education measures, and to promote and increase awareness of environmental issues and how best to deal with them.

One of the main weaknesses observed during the project concerns the agencies involved in workshops and meetings. Irregular attendance of participants from some of the agencies resulted in inconsistent contributions and a lack of interest. Furthermore, some participants did not have the appropriate skills and were also unlikely to be interested in environmental issues. Stakeholders should realize the socio-economic gains that can be made by

implementing the UNFCCC. Therefore there is a need for awareness and understanding among stakeholders especially the NGOs of national commitments under the Convention and how they may be contributing to emissions of green house gases and its mitigations.

4.1.4 Policies and Strategies

The integration of climate change issues into policies and strategies development and implementation provides further opportunities to increase the profile and awareness around the issue of CC and how it may affect Tonga. Recommendations from the Initial National Communication were used to formulate the National Climate Change Framework and Policy that was approved by Cabinet in January 2006.

The objective of this Climate Change Policy is to promote sustainable management, conservation, and enhancement and formulate appropriate responses to climate change in Tonga, Article (4) (1) (d-f). There is no specific policy dealing with the effects or causes of climate change which in effect gives the issue low priority at the national level. Severe limitations in resources have turned the focus towards other issues that are of greater urgency to the government. Commitment and awareness among policy makers is needed for a legislative framework that can accommodate and facilitate financial allocations from government budgets. Issues of Climate Change can be included in the policy and planning through inclusion of considerations relating to climate change on Tonga's agricultural productivity again recognizing the socio-economic gains from implementation of the Convention. One of the main weaknesses is the failure to include provisions in the policies and strategies of the various ministries.

4.1.5 Mitigation

There are climate change activities currently in place which fulfil Tonga's commitment under the UNFCCC. With reference to Article (4) & (12), the completion of its Initial National Communication Report revealed some gaps in the sectors involved. During the preparation of Tonga's GHGI there were uncertainties due to lack of available and credible data, absence of national conversion and emission factors, lack of basic information specifically on waste composition and the quantity being produced. To alleviate the existing and future problems there is a need to strengthen local capacity for future GHGI compilation by training provided that there is financial and technical assistance for future updates of GHGI and also establish an inventory preparation and data collection at the National focal point. There were potential options/measures identified in Tonga's Initial National Communication to mitigate the concentrations of the emissions of greenhouse gases from the Energy, Forestry, Agriculture and Waste Sectors. It was recommended that these options/measures will be most effective in Tonga if external financial resources, technical expertise and assistance were available.

4.1.6 Adaptation

The assessment of the vulnerabilities of Tonga to the adverse effects of climate change, and sea level rise was undertaken in the Initial National Communication. The assessment was conducted to examine the degree of current and future risks induced by climate and sea level changes on the vulnerable sectors in Tonga, (Coastal Areas, Water Resources, Fisheries, Agriculture, Forestry and Human Health). Further, strategies to reduce Tonga's vulnerabilities would facilitate the adequate adaptation of Tonga and its environment to the detrimental impacts of climate change, variability and sea level rise were formulated such as; coastal protection systems (foreshore protection infrastructure) and replanting, promote agroforestry, inland reforestation and enhance existing technical capacity. These activities and projects were enabled through funding from donor countries.

4.1.7 Systematic Observation

To promote and cooperate socio economic and systematic observation, the Tonga Meteorological Service (TMS) handles the systematic collection of meteorological data for the kingdom, providing weather information for aviation and shipping purposes and also providing weather forecasts to the general public. TMS also provides cyclone and early drought warnings. The determination of changes in climate requires extended periods of uninterrupted data collection and appropriate models. There are a number of missing data in the existing climatic records. The maintenance of technical equipment of the TMS depends upon adequate funding. Overseas funded Projects are currently in place to enhance the Climate forecasting capacity of the TMS however, technical equipment and professional skills are still needed.

4.1.8 Legislation

There is currently no legislation specific to climate change, its effects or causes. Mandates for the existing legislations with provisions related to climate issues are fragmented among government Ministries, departments and statutory board (Table 1). Some of the existing legislations are too old and out dated and are inappropriate and inadequate to present situations. The need is to review old Acts to ensure that are brought into line with new policies on the environment, nationally and internationally.

There seems to be conflicting roles between meeting the need for land for residential purposes and protecting susceptible delicate lands such as swamps and low lying areas. Tonga should take CC considerations into account in their relevant social, economic and environmental policies and legislations with a view to minimizing the adverse effects on the economy, public health and on the quality of the environment. There is lack of regulations and enforcement of the laws. The long time frames associated with the effects of CC result in low prioritisation of the issue on the national agenda. Again, the limited resources available at the national level turn the focus towards issues considered more urgent and short term.

4.1.9 Monitoring and Evaluation

The Project Management Unit of the DOE is following up relevant stakeholders to find out whether climate change related activities currently in place are continually evaluated and monitored. Monitoring and evaluation are important for tracing and detecting changes in climatic conditions and determining the contribution to global emissions among other things. Tonga has the capacity to take advantage of funds established by the UN to help developing countries in the implementation of projects such as that in the Initial National Communication, but needs to have an effective mechanism in place for monitoring and evaluation progress. Tonga's Environmental Impact Assessment (EIA) regulations are yet to be approved.

On the current limited resources, activities carried out by projects only take place for the duration of the project. The minimal funds from government budgets for climate or environmental issues are insufficient for running projects. The lack of adequate funding is one of the most significant factors which prevents the successful implementation and consideration of the objectives of the UNFCCC.

4.1.10 Resources

Issues of climate change are challenging and require specialised training and education on methods of monitoring and research. The level of expertise required for integration of concepts and information related to the UNFCCC is high. Tonga has the technical capacity to meet the objectives of the UNFCCC however the limited number of individuals with the appropriate knowledge and skill is often a problem. Individual staff members are often given heavy burdens and required to provide inputs to government, NGOs and community initiatives. The nature of this field is highly specialised and with the limited number of trained professionals, greater work loads and difficult working conditions there is significant loss of staff to other organizations, regional or international.

The government has a transparent process for recruiting the right person for the job. An advertisement is first posted followed by an interview by DOE, Public Servants Commission (PSC) and government representatives before approval by the PSC. Yet some government departments are under staffed and experience heavy work loads which mean it is difficult to absorb additional responsibilities associated with project management and implementation. It is crucial to recruit the right person with the experience and sufficient skill to implement the policies, strategic plans and legislations.

4.2 Root Cause Analysis

A root cause analysis looked in more detail at the root causes of the specific weaknesses or gaps which have been identified as problems in the Stock-taking and SWOT analysis. A workshop was carried out that involved stakeholders to facilitate this process and which used a problem tree to present the root causes.

The statement/main issue raised is that Tonga is highly vulnerable to Climate Change. There were six (6) core problems identified. Effects of these problems were also identified (Diagram A).

Factors contributing to each core problem were presented in Diagrams A1-A6.

DIAGRAM A

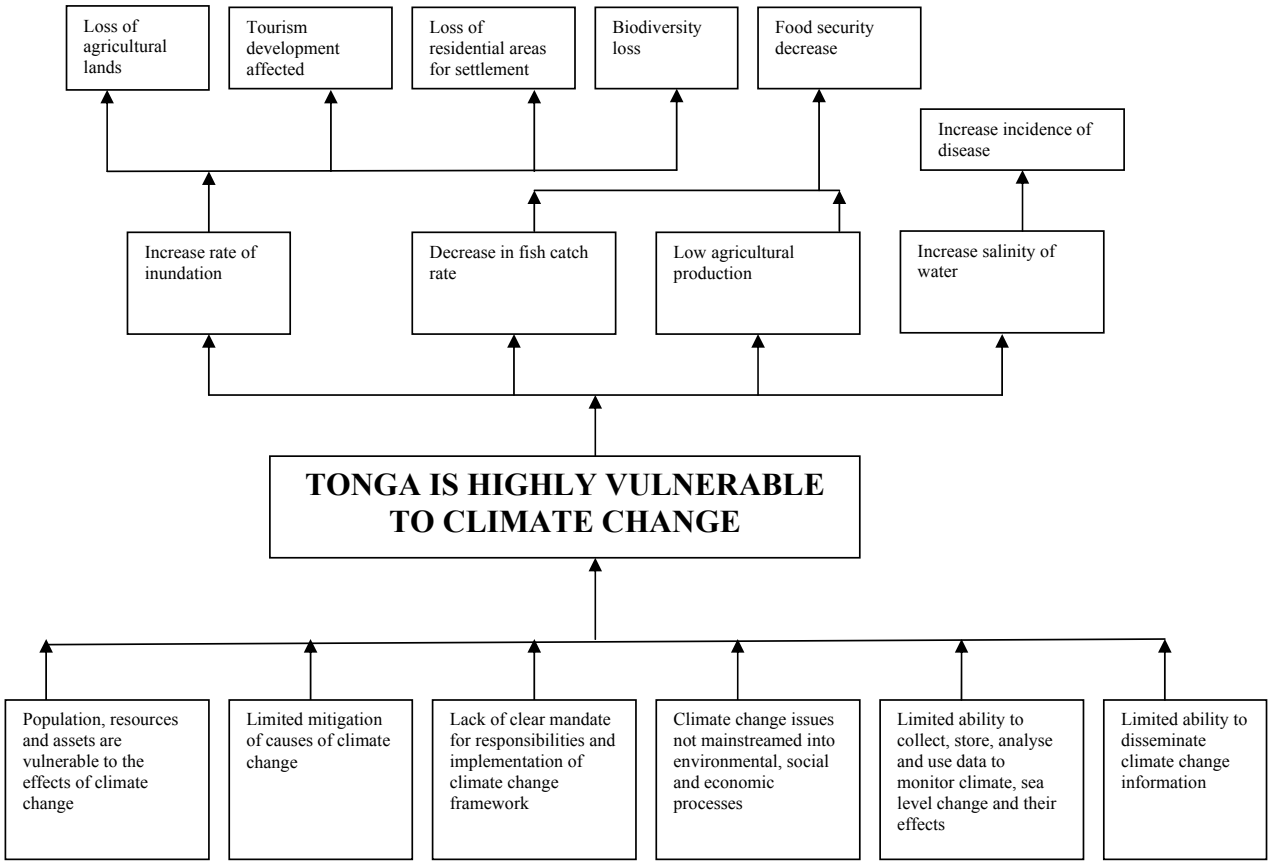

Loss of agricultural lands
Tourism development affected
Loss of residential areas for settlement
Biodiversity loss
Food security decrease
Increase incidence of disease
Increase rate of inundation
Decrease in fish catch rate
Low agricultural production
Increase salinity of water
TONGA IS HIGHLY VULNERABLE TO CLIMATE CHANGE
Population, resources and assets are vulnerable to the effects of climate change
Limited mitigation of causes of climate change
Lack of clear mandate for responsibilities and implementation of climate change framework
Climate change issues not mainstreamed into environmental, social and economic processes
Limited ability to collect, store, analyse and use data to monitor climate, sea level change and their effects
Limited ability to disseminate climate change information

DIAGRAM A1

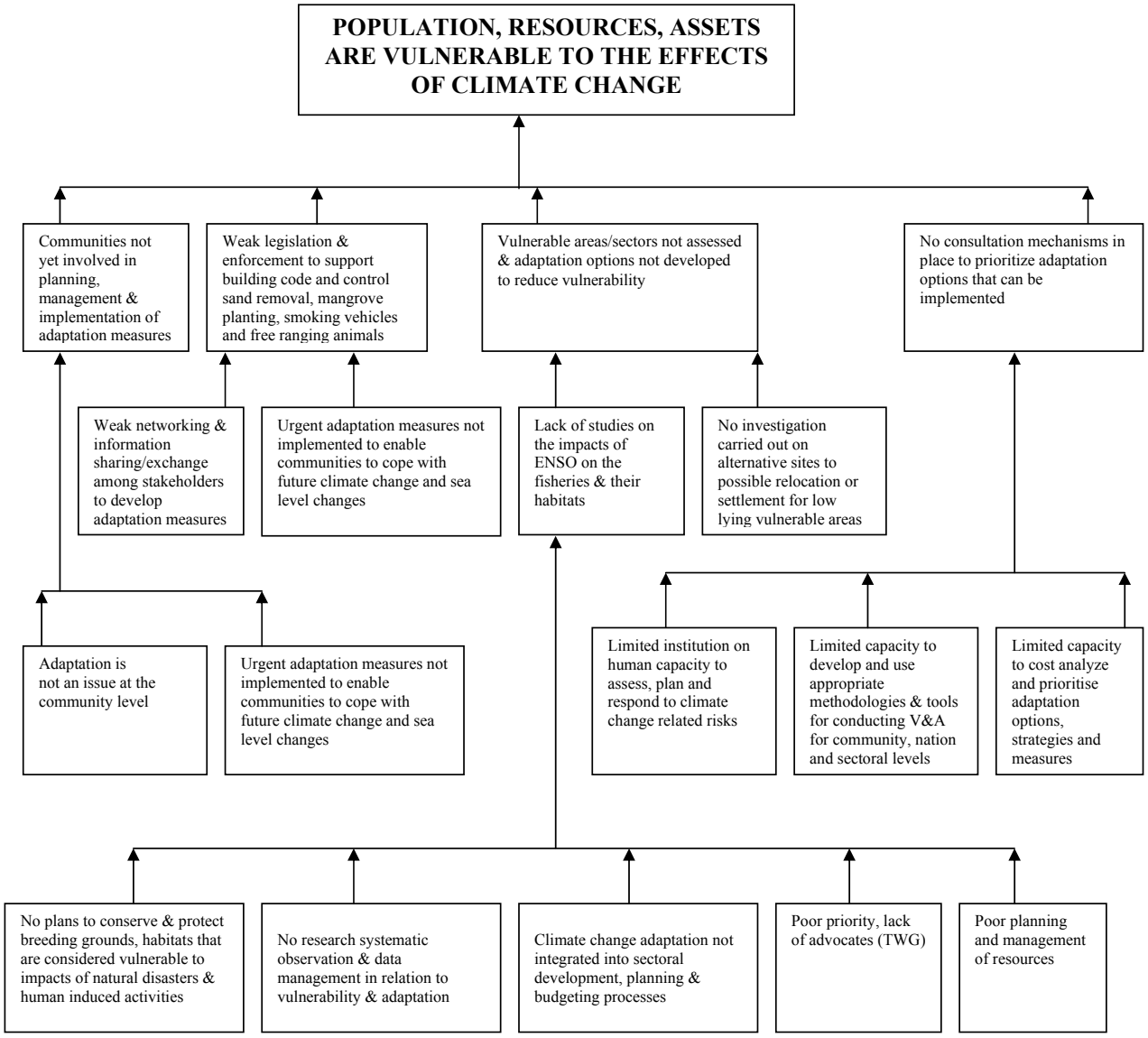

POPULATION, RESOURCES, ASSETS ARE VULNERABLE TO THE EFFECTS OF CLIMATE CHANGE
Communities not yet involved in planning, management & implementation of adaptation measures
Weak legislation & enforcement to support building code and control sand removal, mangrove planting, smoking vehicles and free ranging animals
Vulnerable areas/sectors not assessed & adaptation options not developed to reduce vulnerability
No consultation mechanisms in place to prioritize adaptation options that can be implemented
Weak networking & information sharing/exchange among stakeholders to develop adaptation measures
Urgent adaptation measures not implemented to enable communities to cope with future climate change and sea level changes
Lack of studies on the impacts of ENSO on the fisheries & their habitats
No investigation carried out on alternative sites to possible relocation or settlement for low lying vulnerable areas
Adaptation is not an issue at the community level
Urgent adaptation measures not implemented to enable communities to cope with future climate change and sea level changes
Limited institution on human capacity to assess, plan and respond to climate change related risks
Limited capacity to develop and use appropriate methodologies & tools for conducting V&A for community, nation and sectoral levels
Limited capacity to cost analyze and prioritise adaptation options, strategies and measures
No plans to conserve & protect breeding grounds, habitats that are considered vulnerable to impacts of natural disasters & human induced activities
No research systematic observation & data management in relation to vulnerability & adaptation
Climate change adaptation not integrated into sectoral development, planning & budgeting processes
Poor priority, lack of advocates (TWG)
Poor planning and management of resources

DIAGRAM A2

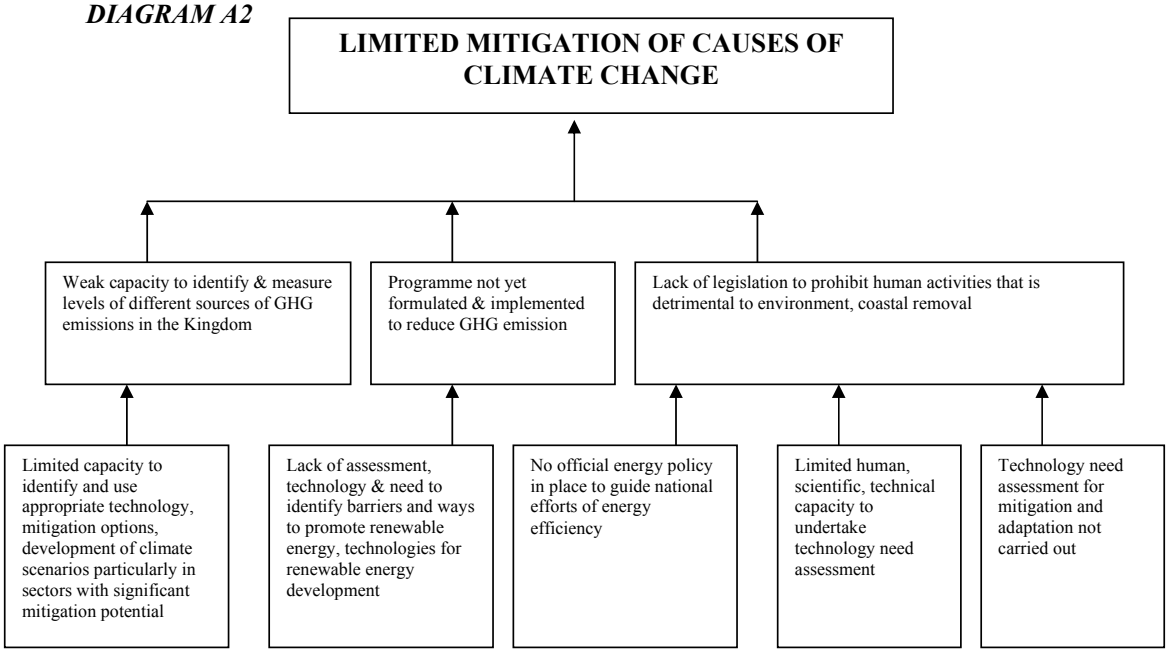


DIAGRAM A3

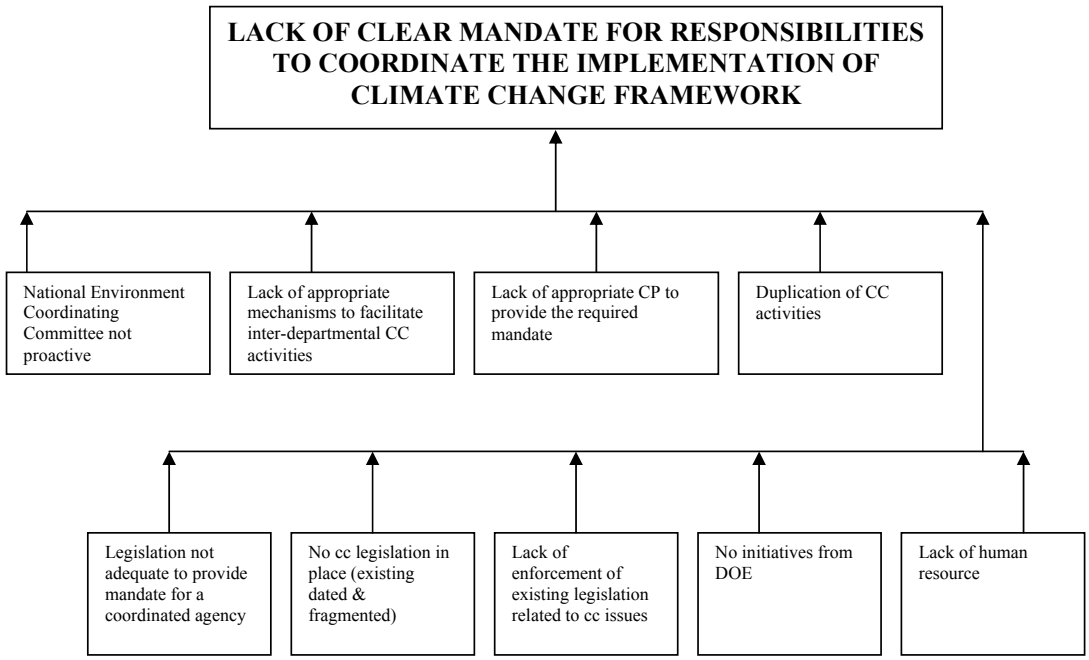
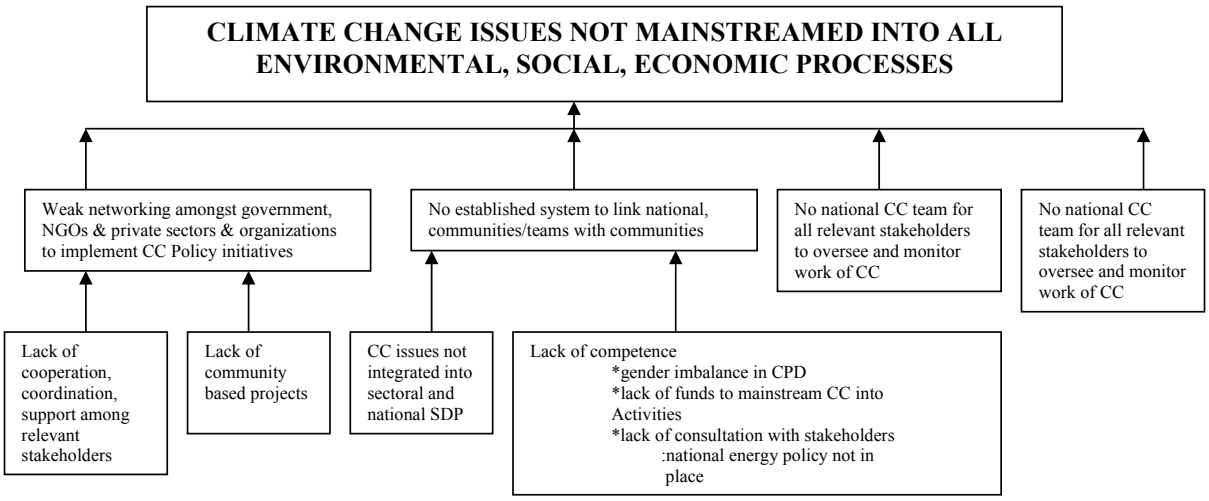


DIAGRAM A4



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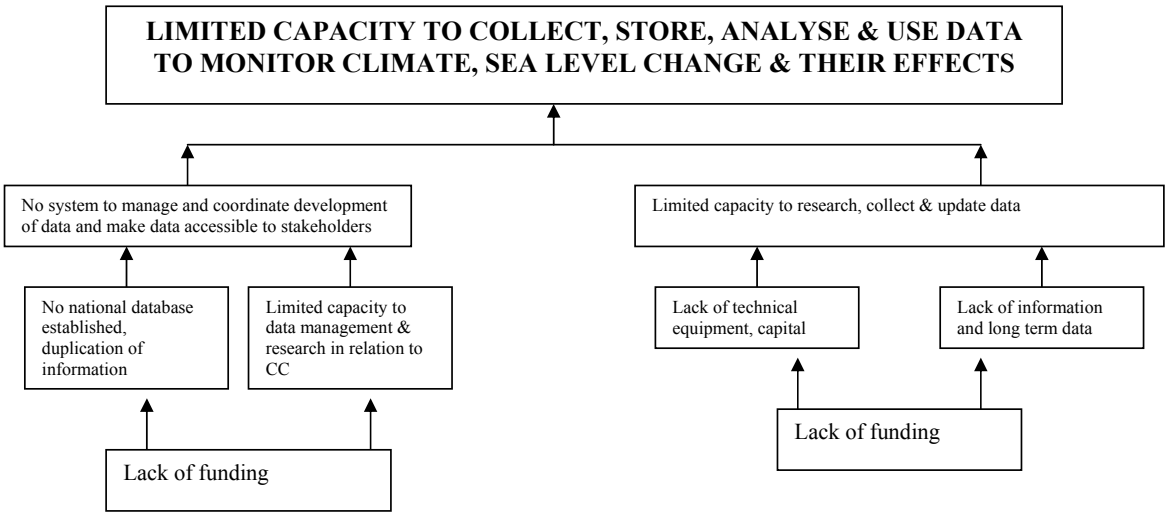
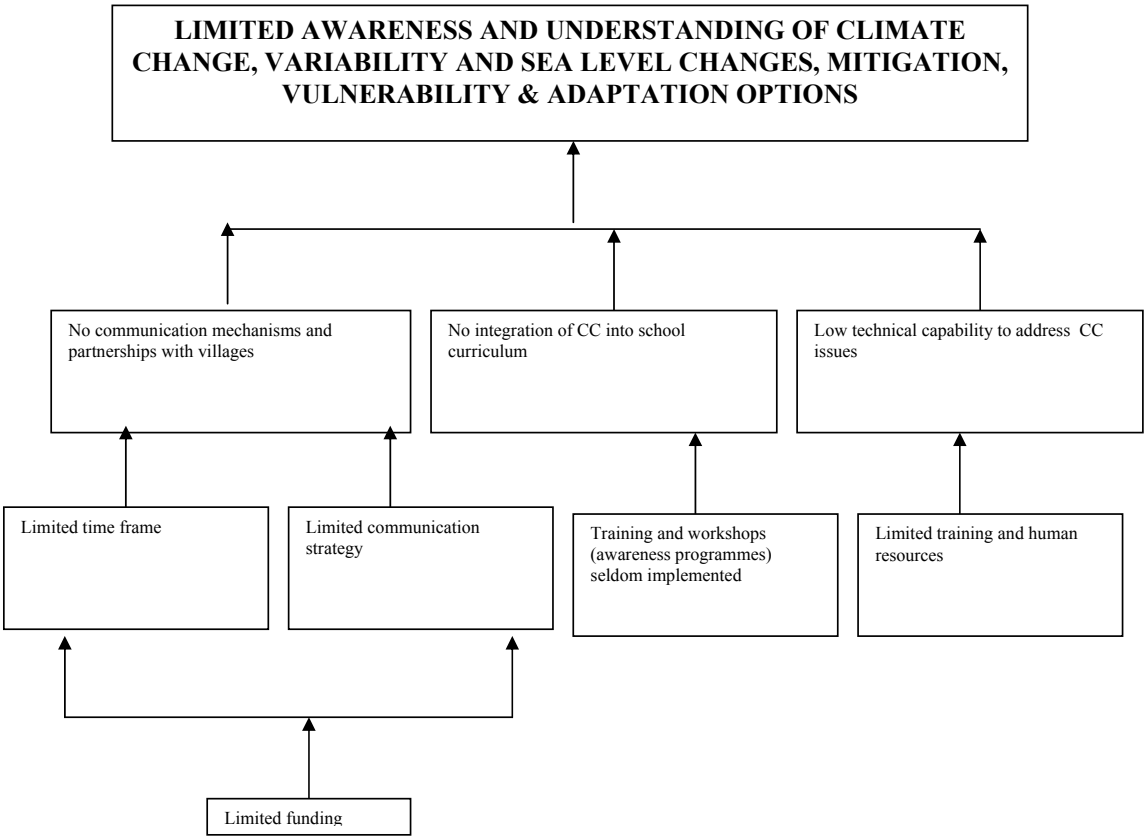


DIAGRAM A6



4.3 PRIORITISATION OF CLIMATE CHANGE ISSUES

4.3.1 Prioritisation Matrix

Priorities were determined on the basis of:

(a) scale of the problem - this determined whether the issue is of local, regional, national or global significance
(b) level of concern - whether the concern is low, medium or high
(c) Tonga's ability to adequately address the issue - whether it is low, medium or high.

Table 13. Climate Change Issue Prioritisation

Number	ISSUE	Scale of Problem	Level of Concern	Ability to Adequately Address Issue	Priority Ranking
1	No climate change legislation in place (existing legislation- dated & fragmented/no cc legislation)	L	M	M	2
2	Lack of enforcements of existing legislation related to climate change issues	L	M	M	3
3	Lack of resources (Human, Financial, Technical Equipment , Infrastructure)	L	H	M	1
4	Lack of awareness and availability of climate change related information	L	M	M	1
5	Lack of cooperation, coordination, support among relevant stakeholders	L	M	M	1
6	Inconsistent participation of project stakeholders	L	M	M	2
7	Low priority	L	M	M	3
8	Lack of commitment /interest	L	M	M	1
9	Lack of long term monitoring and evaluation, planning mechanisms	L	H	H	1
10	Climate change issues are not integrated into sectoral & national strategic development plan	L	M	M	2
11	Environmental studies programme is not a compulsory subject at Secondary education (only at Primary education)	L	L	M	3

Note:
Scale of Problem: L – local, R – regional, G – global
Level of Concern and Ability to adequately address issue: L- low, M – medium, H – high
Priority ranking from 1 to 5 (1 = most severe, 2 = second most severe, etc to 5 = least severe)

2. These priority capacity development issues were ranked relative to each other and level of need. 1-5 (1 = most severe to 5 = least severe)

Rank 1

(a) Lack of resources (Human, Financial , Technical Equipment , Infrastructure)
(b) Lack of awareness and availability of climate change related information
(c) Lack of cooperation, coordination, support among relevant stakeholders
(d) Lack of long term monitoring and evaluation, planning mechanisms
(e) Lack of commitment /interest

Rank 2

(f) Climate change issues are not integrated into sectoral & national strategic development plan
(g) No climate change legislation in place (existing legislation- dated & fragmented/no cc legislation)
(h) Inconsistent participation of project stakeholders

Rank 3

(i) Environmental studies programme is not a compulsory subject at Secondary education (only at Primary education)
(j) Lack of enforcements of existing legislation related to climate change issues
(k) Low priority

4.4 NATIONAL CAPACITY DEVELOPMENT NEEDS

The key capacity constraints and development needs of Tonga to adequately address the climate change challenges and to comply with its commitments and obligations to UNFCCC were identified by key stakeholders during a NCSA workshop convened particularly for this exercise, using a questionnaire designed for needs identification at three different levels: the systemic, institutional and individual levels.

4.4.1 Systemic Capacity Development Needs

The emphasis was on the overall policy framework in which individuals and organizations operate and interact with the external environment, as well as the formal and informal relationships of institutions.

4.4.2 Policy Framework

The general responses from stakeholders indicated the absence of national environment and sustainable development policies to guide the environmental work currently underway, although the National Strategic Development Plans include sustainable development as a national goal.

The responses also indicated that the national macro-economic policies and decision-making processes are not integrated across sectors, and environmental considerations do not always feature in these processes.

Furthermore, the absence of a comprehensive arrangement for integrated policy development among decision makers of the key institutions, presents a barrier to a sustainability approach in policy or management.

The capacity needs suggested by the stakeholders for the policy framework to successfully meet the obligations to CCC is for integration of all key sectors at the national level and to propose and devise precise and clear national environmental policies, based on contributions from all government sectors and institutions, the private sector, and the general public.

4.4.3 Legal and Regulatory Framework

There are no existing laws that directly address the CCC concerns although existing laws bear some relevance to CCC and not all are administered by DOE but authoritative powers therein are vested in other Government Ministries.

The existing laws that bear some relevance to the obligations embodied in the CCC are as follows:

Environment Impact Assessment Act 2003

Marine Pollution Prevention Act 2002

Pesticides Act 2002

Waste Management Act 2005

Public Health Act 1992

Education Act (Cap.86)

Noxious Weeds Act (Cap. 128)

Forests Act (Cap. 126)

Petroleum Act, Petroleum Regulations and Petroleum Mining Regulations

Land Act (Cap. 132) and Land Regulations

Parks and Reserves Act (Cap.89)

The Minerals Act (Cap. 133) and Petroleum Mining Act (Cap.134)

Ozone Layer Protection Bill (2006)

The existing environmental legislation is not only dated but fragmented. There is no climate change legislation in place. The need therefore is for an umbrella environmental legislation to cover all aspects of climate change as defined in the Convention. Laws specific to climate change containing the obligations of Tonga to CCC are also needed in order to provide legal force for Tonga to perform the obligations – otherwise Tonga would not be legally obliged to accord with the requirements of CCC at a national level and this will minimize the effectiveness of CCC. There is also a need to draft a Climate Change Bill to implement the Convention on Climate Change

4.4.4 Management/Accountability Framework

Some Government ministries have overlapping and unclear management powers. Not only that, but accountability is weak throughout the whole structure. The Government ministries need to have clear responsibilities and accountability at all levels

4.4.5 Economic Framework

All sectors indicated inefficiency of marketing functions.

4.4.6 Systems Level Resources

In terms of resources, Tonga has continually been assisted by regional and international organizations it is affiliated with on climate change activities. Government commitment to environmental issues in terms of resources is negligible. The financial resources currently operated by Treasury have 82% allocated for salary and very limited

for operations. The huge allocation of the national budget towards civil servants' salary came about in 2005 as a result of demands by government civil servants for pay increases of 60%, 70% and 80%. There is also insufficient climate change skilled human resources and technical equipment for climate change data collection, research to name a few of the shortages.

The Government needs to have a budget allocation for environmental capacity development. An upgrade of human and technical resources is also necessary for effective and efficient climate change activities

4.4.7 Processes and Relationships

There are indications of ineffectiveness in the interactions of government ministries due to overlapping and unclear authority, which in turn prevents them from working together. There also appears to be a lack of integration across sectors. As such, there is a need for more cooperation, interaction and sharing of facilities and expertise in order to be more efficient. More coordinated efforts are also needed to avoid overlaps in functions and roles.

4.4.8 Institutional Capacity Development Needs

The focus was on the overall organizational performance and functioning capabilities, as well as the ability of an organization to adapt to change.

4.4.9 Mission/Strategic

Responses from stakeholders indicated that all sectors have clear vision/mission statements and Corporate Plans. However, the Department of Environment (DOE) is still without very clear mandate with regard to the Ministry of Land Survey and Natural Resources (MLSNR).

The DOE needs to have clear mandates. Not only that, but relevant government departments should link their missions/visions to environmental issues. There is also a need for annual review of Corporate Plans.

4.4.10 Culture/Structure/Competencies

The existing institutional structures have been built pragmatically in response to particular issues as perceived by the government at the time. The need therefore is for restructuring and also for in-service programmes to improve management skills.

4.4.11 Processes

Some institutional processes are in place for effectiveness in work performance such as Quality Assurance Management. However, most institutions lack such processes therefore there is a need to set up formal and

effective monitoring and evaluation procedures. Staff should be made aware of the processes and procedures defined by the institution or the system.

4.4.12 Human Resources

The majority of the workforce directly involved with climate change issues lack qualifications and skills. Technical skills and qualifications particularly in environmental studies and specific to climate change need to be upgraded.

4.4.13 Financial Resources

All sectors have restricted and very limited financial resources to deal with. The government has an insufficient budget for operations because 82% is for salary alone. Environmental issues are already low in priority, and with the lack of finance for operations, environmental issues are neglected. The need is for effective management of financial resources and to balance the budget to be able to resource the operations and to cover all areas needed. Where there is external aid, there is a need to properly utilise it.

4.4.14 Information Resources

All sectors have information resources available and distributed such as ERIC of the DOE, Ministries Annual Reports, networking within and between ministries and other sectors. There is also an information section in some sectors. A more comprehensive data information collection system so that information could be compiled to better identify needs. Computerising data and networking is necessary and individual websites for ministers could possibly be useful.

4.4.15 Infrastructure

With regards to the infrastructure, there is inequality in distribution within ministries and between ministries. Equipment such as computers are not properly managed due to lack of personnel with computer maintenance skills. A fairer distribution of equipment, vehicles and such is needed in order to effectively carry out the tasks needed to meet the commitments to climate change activities.

4.4.16 Individual Capacity Development Needs

The focus was on the process of changing attitudes and behaviours-imparting knowledge and developing skills while maximizing the benefits of participation, knowledge exchange and ownership.

4.4.17 Job Requirements and Skill Levels

Specialised technical skills specific to climate change activities requirements are very limited in Tonga. The need therefore is to provide skilled refreshment programmes and further training to improve the specialized technical skills and upgrade qualifications.

4.4.18 Training and Retraining

The responses indicated that training does take place in all sectors. The trainings are conducted through different modes and methods. There are short-term training, internal/regional workshops, conferences and seminars. In some cases training is very much project driven. At other times, it is only conducted when funds are available from donor countries or agencies. Training is ad hoc in most cases.

The following were the training/retraining needs identified:

- To diversify training both formal and informal to cover a wide range
  (a) On the job training is paramount
  (b) more in-depth training
  (c) training of specialists
  (d) in-service training
- Training to be done locally or overseas
- To coordinate training in order to prioritize areas of significance
- Prevent skilled personnel from leaving the jobs

4.4.19 Career Progression

Individuals are able to advance and further their professional development through available training opportunities both local and overseas as well as through workshops both internal and regional.

Some sectors have performance appraisals for promotion and self-development, however some have no career development until an upper level position becomes vacant.

The following were identified as individual career profession development needs:

- Further study and training opportunities overseas
- Design a strong clear methodology for job assessment
- Promote career progression as specialisation is vital for skills promotion
- More and better rewarding system in place to encourage and improve individual professional development

4.4.20 Accountability/Ethics

Responsibilities are effectively delegated to a certain extent.

The PSC has a Code of Ethics in place for all civil servants to abide by. Where individuals are given responsibilities, they are held accountable for the actions delegated to them. In sectors such as the Ministry of Health MOH, the individual is responsible for providing an incidence report of their own wrong doings.

The following were identified as capacity development needs:

- More accountability procedures in place
- Staff awareness and accountability
- To have in place a defined system of delegation and being responsible
- To enforce individual accountability and responsibility
- To revisit the current system

4.4.21 Access to Information

All sectors showed adequate access to information from Ministries Annual Reports. Some access is limited such as to the internet - individuals are only allowed when the need arises.

The Ministry of Education has in place an Education Monitoring Information Systems (EMIS).

The responses also indicated that there is a lack of systematic procedures for information access.

The capacity needs identified by stakeholders are:

- open and improve access
- computerize information
- a central information database for all government ministries
- websites for government and non-government organizations
- financial resources to enable internet access

4.4.22 Personal/Professional Networking

Numerous associations exist within Government ministries where individuals can contact and exchange knowledge with their colleagues, such as the Public Service Association, Tonga Nursing Association, Tonga Medical Association, Tonga Pharmacy Association, Principals Association, Subjects Associations, Sports Association and so forth. There are also Non-government associations for example the Friendly Island Teachers' Association, National Youth Congress, Pan Pacific, Tonga Association of Non-Government Organisations to name a few.

The following capacity needs were identified:

- professional networking is necessary to attain proficiency
- electronic networking to be in place

- formalize network between interested parties catered for by government ministries
- promote and support a more robust professional and personal networking system

4.4.23 Performance/Conduct

The PSC performance appraisal is in place for Government departments to measure individual performances. Some sectors have also designed extra performance measurement tools such as the Nursing performance appraisal, MOE – Point system evaluation.

The capacity needs identified are:

- Performance measurement systems in place for NGOs
- Training for appraisal (performance)
- More active appraisals

4.4.24 Incentive/Security

All sectors have promotion procedures in place. There are also annual and accelerated increments awarded. The Ministry of Health indicated an extra incentive of duty allowance. Completion of studies provides greater job security.

The capacity needs identified were:

- To have comprehensible promotion procedures that ensure fair promotion
- increase and improve incentives to ensure excellent performance

4.4.25 Values, Integrity and attitude

Values, integrities and attitudes are not clear cut however, Civil Service Codes of conduct are in place for civil servants to abide by. Some professional sectors have their own code of conducts to ensure professionalism in their duty performances.

The capacity needs identified were:

- to enforce professionals Codes of Conduct
- to encourage more positive attitudes and embrace important values that improve performances

4.4.26 Morale and Motivation

Most sectors have overtime payments which motivate individuals. Duty allowance motivates Ministry of Health workers. Acting allowances motivate and boost individuals' morale.

However, there is a need to avoid abuse of overtime payments.

4.4.27 Inter-relationships and team work

Responses from all sectors showed that there is team work and interaction only to a certain extent. There appears to be strong distrust amongst workers which hinders relationships and team work. The need identified is for improvement of attitudes and relationships between Heads of departments and workers.

4.4.28 Interdependencies

All responses indicated interdependence at all levels and the need for improved communication at all levels.

4.4.29 Communication Skills

Communication skills are vital for effective performance and individual communication skills ranged from very poor to excellent at all levels.

The capacity needs identified were:

- to integrate communication skills in the system
- more training for better communication skills
- improvement in all elements of communication skills (speaking, writing etc) to address issues and activities pertaining to climate change.

4.5 SUMMARY OF THE GAPS OR OUTSTANDING WORK REQUIRED FOR TONGA TO EFFECTIVELY ADDRESS CLIMATE CHANGE AND THEIR UNDERLYING CAPACITY ISSUES. *(TABLE 14)*

The climate change related problems, the outstanding work needed to address these problems, and the underlying capacity issues are summarized and presented on Table 14.

Table 14: Gaps and Capacity Development Needs

Climate Change Problem	Outstanding work needed to address main problem	Underlying Capacity Issues
Lack of clear mandate for responsibility to coordinate implementation of climate change framework	Adequate legislation to provide mandate for a coordinating agency	No climate change legislation in place (existing legislation dated and fragmented)
	Ensure law enforcement	Lack of enforcements of existing legislation related to climate change issues
	NECC to be proactive	
	Provision of appropriate mechanisms to facilitate inter-departmental CC activities	Lack of appropriate mechanisms to facilitate inter-departmental CC activities
	Cabinet to make appropriate decisions on required mandate	
Climate change issues not mainstreamed into all environmental, social and economic processes	Strong networking amongst Govt, NGO's, and private sector organizations to implement climate change policy and initiatives	Weak networking amongst Govt, NGO's, and private sector organizations to implement climate change policy and initiatives
	Formation of a national climate change team from all relevant sectors and stakeholders to oversee and monitor work in Climate Change	
	Have an established system to link national committees/teams with communities	
	Adequate/ sufficient cooperation/coordination & support among relevant stakeholders	Lack of cooperation, coordination, and support among relevant stakeholders
	Integrate cc issues into sectoral & national SDP	Climate change issues not integrated into sectoral and national strategic development plan
	Line ministries to have specific activities related to CC	
Limited capacity to collect, store, analyse and use data to monitor climate, sea level change and their effects	Establish a system to manage and coordinate development of data and making data accessible to stakeholders	Lack of long term monitoring and evaluation, planning mechanisms
	Improve/Increase capacity to research, collect and update data on climate change and related issues.	
	Improve capacity to manage and store climate related data	
	Increase involvement of local personnel in Climate Change work	
	Establish a national database to avoid duplication of information, and to secure data and access by stakeholders	
	Need for technical equipment/capital, and funding	

Limited awareness and understanding of climate change, variability and sea level changes, mitigation, vulnerability and adaptation options.	Improve technical capability to address and promote climate change issues	Lack of awareness and availability of climate change related information
	Establish effective communication mechanisms and strong partnerships with villages to raise awareness at the village level	Limited production, dissemination and use of outreach materials and limited use of internet.
	Integrate CC programmes/issues into school curriculum	Environmental studies programme is not a compulsory subject at secondary education (only at primary education) Climate change issues not incorporated into non-formal education
	Enhance and strengthen awareness raising and education on climate change issues	
	CC training programmes and workshops to be frequently implemented	
Populations, resources and assets are vulnerable to the effects of climate change	Assess vulnerable areas/sectors and develop adaptation options to reduce vulnerability	Climate change adaptation not integrated into sectoral development planning and budgeting processes
	Put in place a consultation mechanism to prioritize adaptation options that can be implemented	Limited human and institutional capacity to assess, plan and respond to climate-related risks Limited capacity to develop and use appropriate methodologies and tools for conducting V&A assessments at the community, national and sectoral levels Limited capacity to cost, analyze and prioritize adaptation options, strategies and measures
	Involve communities in planning, management and implementation of adaptation measures	Urgent adaptation measures not implemented to enable communities to cope with future climate and sea-level changes.
	Enforce and strengthen legislation that supports the building code, controls sand removal, mangrove cutting, smoking vehicles and free ranging animals	Weak networking and information sharing/exchange amongst stakeholders to develop appropriate adaptation measures
	Carry out investigation on alternative sites for possible relocation of settlements from low lying vulnerable areas.	No plans to conserve and protect breeding grounds, habitats and species that are considered vulnerable to impacts of natural disasters and human induced activities.
		Lack of studies on the impacts of ENSO on fish and their habitats
		No research, systematic observation and data management in relation to vulnerability and adaptation
		Weak Early Warning System for ENSO, tropical cyclones and drought
Limited mitigation of the causes of Climate Change	Strengthen capacity to identify and measure levels of different sources of GHG emissions in the Kingdom	Limited capacity to identify and use appropriate technologies, methodologies and tools for assessment of mitigation options and development of mitigation scenarios particularly in sectors with significant mitigation potential

	Formulate and implement programmes to reduce GHG emissions	Lack of assessment on technology needs to identify barriers and ways to promote renewable energy technologies for renewable energy development
	Need legislation to prohibit human activities that are detrimental to the environment (sand removal, deforestation, burning of solid waste, below par vehicles)	No official energy policy in place to guide national efforts on energy efficiency.
		Technology needs assessment for adaptation and mitigation not yet carried out
		Limited human, scientific and technical capacity to undertake technology needs assessments

RECOMMENDATIONS – ACTIONS TO BE TAKEN

For Tonga to successfully address climate change related problems and meet the obligations of the UNFCCC which it has acceded to, the following actions are recommended for future considerations:

(a) Draft a Climate Change Bill to implement the Convention on Climate Change.
(b) Strengthen enforcements of existing legislation related to CC issues
(c) Develop cooperation, coordination and support among relevant stakeholders
(d) Integrate CC issues into sectoral and national strategic development plans
(e) Set up long term monitoring, evaluation and planning mechanisms
(f) Enhance awareness and availability of CC related information
(g) Environmental studies programme to be a compulsory subject at secondary education
(h) CC issues to be incorporated into non-formal education
(i) Enhance and improve the production, dissemination and use of outreach materials and use of internet
(j) Integrate CC adaptation into sectoral development planning and budgeting processes
(k) Strengthen human and institutional capacity to assess, plan and respond to climate-related risks
(l) Strengthen capacity to develop and use appropriate methodologies and tools for conducting V & A assessments at the community, national and sectoral levels.
(m) Strengthen capacity to cost, analyze and prioritize adaptation options, strategies and measures
(n) Implement urgent adaptation measures to enable communities to cope with future climate and sea-level changes
(o) Strengthen networking and information sharing/exchange amongst stakeholders to develop appropriate adaptation measures
(p) Make plans to conserve and protect breeding grounds, habitats and species that are considered vulnerable to impacts of natural disaster and human induced activities
(q) Conduct studies on the impacts of ENSO on fish and their habitats
(r) Conduct research, systematic observation and data management in relation to vulnerability and adaptation
(s) Strong Early Warning System for ENSO, tropical cyclones and drought
(t) Develop capacity to identify and use appropriate technologies, methodologies and tools for assessment of mitigation options and development and development of mitigation scenarios particularly in sectors with significant mitigation potential
(u) Assess technology needs to identify barriers and ways to promote renewable energy technologies for renewable energy development
(v) Put in place an official energy policy to guide national efforts on energy efficiency
(w) Carry out a technology needs assessment for adaptation and mitigation
(x) Improve the human, scientific and technical capacity to undertake technology needs assessments

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ANNEXES

Annex 1: Questionnaires

CAPACITY DEVELOPMENT NEEDS

Systemic Capacity

Functions	Exists	Needed
Policy Framework	– National Strategic Developments Plans – sustainable development is a national goal but there is a lack of appropriate national environmental and sustainable development policies – national macro-economic policies and decision-making processes are not integrated across sectors, and environmental considerations do not always feature in these processes – absence of a comprehensive arrangement for integrated policy development among decision makers of key institutions, presents a barrier to a sustainability approach in policy or management	– to ensure that sustainable development principles are integrated at the national level – need clear national policies for sustainable development to be formulated, based on contributions from all government sectors and institutions, the private sector, and the general public – need to ensure consultation and co-ordination among relevant government institutions and the general public in order to protect the environment – strong & clear policy related to environment – comprehensive framework within one agency – equal priority
Legal/Regulatory Framework	– No existing laws that directly address the CCC concerns although existing laws bear some relevance to CCC, and not all administered by DOE but authoritative powers therein are vested in other Government Ministries. – Existing laws that bear some relevance to the obligations embodied in the CCC are as follows: – Environment Impact Assessment Act 2003 – Aquaculture Management Act 2003 – Fisheries Management Act 2002 – Marine Pollution Prevention Act 2002 – Pesticides Act 2002 – Waste Management Act 2005 – Public Health Act 1992 – Education Act (Cap.86)	– an umbrella environmental legislation because the existing legal framework is very limited in scope and does not cover all aspects of climate change as defined in the Convention on Climate Change. – laws specific to Climate change – laws in place containing the obligations of the State Party (Tonga) to CCC in order to provide legal force on State Party (Tonga) to perform such obligations – otherwise Tonga would not be legally obliged to accord with the requirements of CCC at a national level and this will minimize the effectiveness of CCC. – Climate Change Bill be drafted to implement the Convention on Climate Change

	– Noxious Weeds Act (Cap. 128) – Animal Disease Act (Cap.146) – Forests Act (Cap. 126) – Petroleum Act, Petroleum Regulations and Petroleum Mining Regulations – Land Act (Cap. 132) and Land Regulations – Parks and Reserves Act (Cap.89) – The Minerals Act (Cap. 133) and Petroleum Mining Act (Cap.134) – Ozone Layer Protection Bill 2006) – Biosafety (Living Modified Organisms) Bill 2006	– clear, concise, direct and relevant
Management /Accountability Framework	– Government ministries have overlapping and unclear management powers e.g. Minister of Lands under *Parks and Reserves Act and the Land Act has* power to issue leases in specified marine and terrestrial areas and also for conservation and management of marine and national parks and in all government land. This is inconsistent with the regulation of fishing by the Minister of Fisheries in accordance with a fishery plan, licensing regime or declaration of a reserve for subsistence fishing under the Fisheries Act. accountability is weak throughout the whole structure – TWB – Board of Directors responsible for decision making – Board responsibilities clearly defined (contract)	– need accountability at all levels – Government ministries to have clear responsibilities – facilitate and strengthen management framework
Economic Framework	marketing functions to some extent but not efficient inconsistent, unreliable overseas market activities must have some economic impact (short and long term)	– equity distribution of opportunities – price systems to be economical but sustainable – to facilitate and strengthen economic strategies framework in order to have positive impact – economic modelling may be relevant – Stability and profitability
Systems Level Resources	– Tonga is a member of the following regional and international organizations that assist Tonga in Climate Change Activities all United Nations agencies, WMO, SPREP, ForSec,	– need for Government budget allocation for environmental sustainable development – upgrade resource levels both technically and managerially in order to enhance system

	SPC, SOPAC participation in AOSIS negotiations and workshops participation in UNFCC Conference of the Parties bi-lateral agreements with the government of Australia and Japan provide training on the area of climate change – commitment to environmental issues accorded by the Government in terms of resources is negligible – financial resources currently operated by Treasury (limited budget - 82% salary very limited amount remaining for operations) – insufficient environmental (Climate Change) skilled human resources in terms of management and technical personnel. – insufficient technical equipment/ tools required for climate change data collection activities, research etc – NGOs lack human and financial resources (volunteer based e.g. PAN Pacific) – information available on website; Ministries and Boards annual reports	– update websites and IT – balance budget between operation and personnel. – additional funds, human resource and equipment/tools
Processes and Relationships	– overlapping and unclear power of ministries contribute to the ineffectiveness in their interactions and to some extent prevent them from working together – lack of integration across sectors – NCC (comprise of Heads of Departments) replaced by NECC – coordinate all existing donor funded environmental projects and act as advisory body and ensure proper and effective implementation of projects at the policy level – NGOs – climate change awareness – local level – e.g. village water – Committee; village women/men local development groups etc	– more cooperation, interaction and sharing of facilities for increased efficiency – sharing of expertise – coordinate efforts to avoid overlaps in functions and roles (especially related ministries e.g. Min. of Agriculture, Min. of Forestry, Ministry of fisheries) – strengthen and enhance work relationships and partnerships

Institutional Capacity

Functions	Exists	Needed
Mission/Strategic Management	– most government departments have clear vision/mission statements, Corporate and Management Plans. However with Department of Environment, though a separate department now from MLSNR, and has the expertise and the experience to develop all the environment and conservation related activities, it is still without very clear mandates with regard to the MLSNR	– link to environmental issues – Corporate and Management plans to be reviewed annually – Management plans (from Corporate plans) to be achievable
Culture / Structure / Competencies	– existing institutional structures have been built pragmatically in response to particular issues as perceived by the government at the time – diverse divisions within individual Government ministries e.g. MOH & MOE (6 divisions each) for daily operations	– restructure – in-service programmes for better management – improve management skills of division heads
Processes	– quality assurance management (MOE) – use key indicators to assess progress and evaluate programmes. Targets set plus quarterly reports from divisions to assess achievability of targets (MOH). – procedures for meter readings, finance (TWB) – related ministries act in isolation to each other e.g. MAF, MLS and Min. of Forest	– need improvement on assessment and evaluative capabilities of worker – set up formal and effective monitoring and evaluation procedures – implementation of procedures already in place – staff to be aware of the processes and procedures defined by the system – more cooperative effort on the part of related ministries – formal processes of interaction and substantiate the degree of interaction
Human Resources	– majority of workforce lack qualification and skills – MOH – Tonga Health Project for training in three phases (Aust. Funded) – policy for workers and training exists (TWB) – voluntary NGOs lack adequate and sufficiently skilled personnel	– upgrade qualification (Diploma to graduate level) and skills – need personnel with technical skills – need professional development – to train locals to attain acceptable technical and management level – need cooperation in all divisions with ministries – need to sustain/maintain staff – training for multi-skilled staff (TWB) – NGOs needs government financial assistance

		– more qualified personnel on environment (degree in Environmental Studies)
Financial Resources	– effective management of financial resources (some Government Departments) – insufficient budget to resource operations (82% salary and very little operation budget). MOE insufficient budget to resource both government and non-govt. schools – very limited and scarce e.g. Min. of Forestry – restricted financial resources – aid from international organizations e.g. Public Health from WHO, UNFPA, UNICEF SPC etc – NGOs e.g. Pan Pacific sell handicrafts, sewing, "bring and buy" activities	– effective management of financial resources – sufficient budget to resource operations – extra funds for equipment, drugs etc – to properly utilize external aid – agencies to strengthen government recurrent budget – balance budget to cover all areas needed – NGOs needs financial assistance
Information Resources	– ERIC (Environment Resource Information Centre) established at Department of Environment which contains information on climate change – Ministries Annual Report – Min. of Forestry – information resources are very limited, scarce and not properly disseminated – information sections in some divisions within ministries – monthly meetings – emails and websites – extensive linking in ministries, institutions and networking with other bodies	– need more comprehensive data information collection system so that information can be compiled to better identify needs – computerize data and networking – Ministries individual website – retraining of IT personnel – availability of information especially to lower levels – increase sharing and providing information on WEB – facilitate information management and dissemination
Infrastructure	– intra-ministerial divisions - some have better and more buildings, vehicle, computers etc. in comparison to others – inter-governmental ministries – some have better infrastructure than others – better infrastructure in the main island than outer islands – lack proper maintenance.	– need fairer distribution of equipment, vehicles etc – need skilled personnel to ensure effective management. – need to computerize records / information

Individual Capacity

Functions	Exists	Needed
Job requirements and Skill levels	– Departmental job descriptions – skills required at diverse levels are available only to certain extent – specialized/technical skills limited	– comprehensive departmental job descriptions – implement/execute job descriptions – modifications due to government reform programmes – need to improve specialized skills and qualifications – job requirements need to be redefined for specialized areas
Training/Retraining	– MOH –local training for Health Officers, pharmacy, X-ray, dental and Nursing curriculum – MOE – TIOE, TIHE, TMPI – training only when funds are available from donor countries or agencies – short term training, internal/regional workshops, conferences, seminars to supplement knowledge – some training very much project driven – training ad hoc in most cases	– need to diversify training both formal and informal to cover wide range (e) On the job training is paramount (f) more in-depth training (g) training of specialists (h) in-service training – the trainings to be done locally or overseas – to coordinate training in order to prioritize areas of significance – prevent skilled personnel from leaving the jobs – need personnel with the relevant qualifications
Career Progression	– opportunities for further professional development through available training opportunities both local and overseas as well as through workshops both internal and regional – programmes/courses for professional needs – performance appraisal for promotion and self-development – no career development unless position is vacant	– more studying / training opportunities overseas – need further professional development needs – need well constructed concise methodology of assessment of job done – need to promote career progression as specialization is vital for skills promotion – need more and better rewarding system in place to encourage and improve individual professional development
Accountability/Ethics	– responsibilities effectively delegated to certain extent	– need more accountability procedures in place – need staff awareness and accountability

	– PSC approve Code of Ethics for civil servants – staff are given responsibilities and are accountable for the actions delegated to them – MOH - incidence report of errors	– need defined system of delegation and being responsible – need to enforce individual accountability and responsibility – revisit current system
Access to Information	– Government Ministries Annual Reports – Staff allowed internet access when the needs arises – adequate but limited sometimes – EMIS (Education Monitoring Information Systems) – website and email – no systematic procedure for information access	– need open and improved access – need to computerize information – need a central information database for all government ministries – need websites for government and non-government organizations – other means of accessing information – financial resources to enable internet access
Personal / Professional Networking	– Associations within each Government ministry e.g. MOH - Tonga Nursing Association, Tonga Medical Association, Tonga Pharmacy Association – MOE – Principals' Association, Subjects Associations, Sports Association – PSA (Public Service Association) – Non-government Associations e.g. FITA, National Youth Congress, Pan Pacific etc	– professional networking is a must to attain proficiency – electronic networking in place – formalize network between interested parties catered for by government ministries – promote and support a more robust professional and personal networking system
Performance/Conduct	– Public Service Commission (PSC) performance appraisal – nursing performance appraisal – MOE – Point system evaluation	– need performance measurement system in place – training for appraisal (performance) – more active appraisal
Incentives / Security	– promotion – annual and accelerated increment – completion of studies provides job security – duty allowance – MOH	– fair promotion – increase and improve incentives
Values/Integrity and Attitudes	– not clear cut – Civil Service Codes of conduct (professionals)	– enforce professionals Codes of conducts – need to encourage more positive attitudes and embrace important values that improve performance
Morale and Motivation	– MOH – duty allowance motivates individuals – Over-time	– need to avoid abuse of over-time – Need to boost workers morale
Inter-relationships and	– Government Departments – team work and	– need to improve attitude and relationships

Team Work	interaction only to certain extent. There appears to be strong distrust amongst workers which hinder relationships and team work	between Heads of departments and workers
Interdependence	– at all levels	– improve in communication
Communication Skills	– effectiveness of communication skills ranges from very poor to excellent at all levels.	– integrate in the system – need training for better communication skills – need improvement in all elements of communication skills (speaking, writing etc)

Annex 2: Capacity Constraint Matrix

The capacity constraints as it relates to the priority issues were identified at the individual, institutional and systemic levels using the Capacity Constraints Matrix. This categorization provides direction for identifying possible opportunities for building the capacity needed. The type of capacity building required was again categorized as

- creating new capacity
- mobilizing or redeploying existing capacity
- enhancing existing capacities

to further define the opportunities for capacity building.

Capacity Constraints Matrix

PRIORITY ISSUES	Individual Capacity Constraints	Institutional Capacity Constraints	Systematic Capacity Constraints
1. No climate change legislation in place (existing legislation-dated & fragmented/no cc legislation)		Enhance and mobilize existing capacities - Institutional framework for climate change is segmented, vague and confusing due to overlapping responsibilities among Government Agencies. Therefore need coordination and cooperation	Provisions of very old legislation that provide the legal framework for current and emerging climate change problems are inadequate to address present situation New capacity - an umbrella environmental legislation to cover all aspects of climate change as defined in the Convention on Climate Change. New capacity - laws specific to Climate change. Also laws in place to provide legal force on Tonga to perform such obligations New capacity - Climate Change Bill be drafted to implement the Convention on Climate Change
2. Lack of enforcements of existing legislation related to climate change issues	New capacity - Appropriate education and awareness raising needed with the police force	New capacity - Environmental provisions of the laws are new areas to the police force e.g. disposing waste on vacant lands. Police force does not normally patrol these areas, nor do they have the resources to patrol these areas, therefore offenders continue their illegal activities. Resources thus needed to operate effectively in enforcing environmental provisions of the law. Enhance and mobilize existing capacities - Build joint enforcement strategies (Ministry of Police and other agencies) to improve enforcement by sharing resources and information	
3. Lack of resources (HR, FR, Technical Equipment , infrastructure)	Create new capacity and enhance existing capacities by training local expertise in climate change field providing appropriate training both formal and informal either locally or overseas to cater for the human resource needs (management skills, technical skills etc.)	Enhance existing capacity - Government departments need to effectively manage their financial resources Need to mobilize existing capacity by promoting and supporting a more robust professional and personal networking system to encourage and facilitate sharing of existing resources	Mobilise and enhance existing capacities - government to increase budget to resource operations New capacity - foreign aid for improvement of technical equipment, infrastructure and training of appropriate human resources.
4. Lack of awareness and availability of climate change related information	Enhance existing capacity – i. Department of Environment mechanism for dissemination and	Create new capacity – i. DOE to provide regular fortnightly television programmes relating to climate change issues	

	sharing climate change information - airing radio programmes on climate change issues, community workshops and meetings, public distributions of information sheets, posters, stickers, newsletters etc ii. NGO e.g. Tonga Trust, National Council of Youth dramatizing climate change issues		
5. Lack of cooperation, coordination, support among relevant stakeholders	New capacity – training to improve individuals communication skills both oral and written at all levels	Enhance and mobilize existing capacities – decision makers and management to enhance coordination, consultation and integration at the institutional level	
6. Inconsistent participation of project stakeholders		Attitude problem – need to change Improve personal and professional networking on environmental issues	
7. Low priority	Raise environmental awareness and high level decision makers to be adequately informed of the significance of a healthy environment to human existence	Improve personal and professional networking on environmental issues	
***8.** Lack of commitment /interest*	(as above)	(as above)	
9. Lack of long term monitoring and evaluation, planning mechanisms		New capacity DOE to put in place a long term monitoring, evaluating and planning mechanism	
10. Climate change issues are not integrated into sectoral & national strategic development plan	(as above)		
11. Environmental studies programme is not a compulsory subject at Secondary education (only at Primary education)		MOE to develop a curriculum on "Environmental Studies" for secondary level and make this subject compulsory for Forms 1 to 4.	

Annex 3: List of Persons Interviewed/Organisations Contacted

GOVERNMENT:
Viliami Manu- Ministry of Agriculture and Food
Taniela Hoponoa – Ministry of Forestry
Kelepi Mafi – Ministry of Lands, Survey & Natural Resources
Tevita Fatai- Ministry of Lands, Survey & Natural Resources
Mosese Latu – Tonga Water Board
Colin Lutui – Ministry of Education
'Ana Kavaefiafi – Ministry of Health
'Emeline Siale 'Ilolahia – Ministry of Civil Aviation
'Apisake Soakai – Ministry of Fisheries
Lupe Matoto – Department of Environment

NGOs:
'Alisi Fotu – PAN PACIFIC
'Ofa Fakalata- Tonga Trust
Marion Kolo – Tonga National Youth Congress

Annex 4: Climate Change Institutional Framework and Implementation Committees

NATIONAL EXECUTIVE AGENCY

NATIONAL COORDINATING COMMITTEE

The Department of Environment was responsible for executing the Climate Change Enabling Activity Project. It also works closely with the National Coordinating Committee in terms of coordinating project work.

This committee was established to function as the advisory body of the project. It also serves as the venue to ensure the coordination and discussion of climate change related issues at the policy level. Respective members were from the following institutions and agencies:

Director of Environment (Chairman)	[Department of Environment]
Secretary for Lands, Survey &Natural Resources	[Ministry of Lands, Survey & Natural Resources]
Director of Agriculture and Forestry	[Ministry of Agriculture & Forestry]
Secretary for Labour, Commerce & Industries	[Ministry of Labour, Commerce & Industries]
Secretary for Fisheries	[Ministry of Fisheries]
Director of Health	[Ministry of Health]
Director of Education	[Ministry of Education]
Secretary for Foreign Affairs	[Ministry of Foreign Affairs]
Secretary for Civil Aviation	[Ministry of Civil Aviation]
Director of Works	[Ministry of Works]
Secretary for Marine & Ports	[Ministry of Marine & Ports]
Director of Planning	[Department of Planning]
President of TANGO	[TANGO]
Project Manager	[Department of Environment]

National Environment Coordinating Committee

This committee was established to replace all the existing NCCs. Its role is to coordinate all existing and future donor projects approved by Cabinet to be executed by DOE. Respective members are from the following agencies:

Minister of Environment as chair
Director of Environment as deputy chair
Head of Technical and Sustainable Development Division. DOE
All project coordinators /managers at DOE as secretary
Secretary of Lands, Survey &Natural Resources
Secretary for Finance
Secretary for Fisheries
Director of Agriculture, Forestry and Food
Secretary for Labour, Commerce &Industries
Secretary for Foreign Affairs
Director of Health
Solicitor General
President of TANGO

Technical Working Group

This group was established to ascertain that the project is properly implemented at the technical level. Members were from the following institutions and agencies;

Dr. Siosiua Halavatau	[Ministry of Agriculture & Forestry]
Dr. Vailala Matoto	[Ministry of Fisheries]
Mr Tevita Malolo	[Ministry of Lands, Survey & Natural Resources]
	[Ministry of Lands, Survey & Natural Resources]
Ms ‘Apisake Makasini Soakai	[Ministry of Fisheries]
Mr ‘Asipeli Palaki	[Department of Environment]
Mr ‘Ofa Fa’anunu	[Ministry of Civil Aviation]
Mr. Tevita Fatai	[Ministry of Lands, Survey & Natural Resources]
Mr Taniela Kula	[Ministry of Lands, Survey & Natural Resources]
Ms Fetongi Tukutau	[Ministry of Health]
Mr Kutusi Fielea	[Tonga Water Board]
Ms Fatai Pale	[TANGO]
Ms Lu’isa Tupou Veihola Tu’i’afitu	[Department of Environment]

Project Management Unit

This unit was responsible for the overall management of the project.

Ms Lu’isa Tupou Veihola Tu’i’afitu	[Project Manager, Department of Environment]
Mr Taniela ‘Ahomalanga Faletau	[Senior Project Officer, Department of Environment]
Ms ‘Anasisivaloa Peaua	[Administrative Assistant, Department of Environment]