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Government of Tonga

and

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PROJECT DOCUMENT

Project Title: Integrated Environmental Management of the Fanga'uta Lagoon Catchment

UNDAF Outcome(s): UNDAF for the Pacific Sub-region 2013-2017 – Outcome Area 1: Environmental management, climate change and disaster risk management

UNDP Strategic Plan Environment and Sustainable Development Primary Corporate Outcome: Legal and regulatory frameworks, policies and institutions enabled to ensure the conservation, sustainable use, and access and benefit sharing of natural resources, biodiversity and ecosystems, in line with international conventions and national legislation (Output 2.5)

UNDP Strategic Plan Secondary Corporate Outcome:
Frameworks and dialogue processes engaged for effective and transparent engagement of civil society in national development (Output 2.4)

Executing Entity/Implementing Partner: Department of Environment and Climate Change, Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications

Brief Description

This GEF project seeks to conserve the ecosystem services of the Fanga'uta Lagoon Catchment on the Tongatapu Island of the Kingdom of Tonga in the South Pacific through an integrated land, water and coastal management approach thereby protecting livelihoods and food production and enhancing climate resilience. The project is part of the Program on "Pacific Islands Ridge-to-Reef National Priorities – Integrated Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store carbon, Improve Climate Resilience and Sustain Livelihoods" under GEF support, maintaining and enhancing the ecosystem goods and services of Tonga's main lagoon catchment and marine reserve areas through integrated approaches to land, water, forest, biodiversity and coastal resource management that contribute to poverty reduction, sustainable livelihoods and climate resilience. It also makes a stronger linkage between sustainable development of freshwater catchment and coastal areas and promotes the implementation of holistic, integrated management of natural resources at the catchment level.

The project objective is to conserve the ecosystem services of the Fanga'uta Lagoon through an integrated land, water and coastal management approach thereby protecting livelihoods and food production and enhancing climate resilience. This will be achieved through interventions at two interconnected levels: national (Outcome 1.1, 1.2, and 3.1) and site level (Outcome 1.1, 1.2, 2.1, and 3.1). Targeting to achieve an integrated management and conservation of the lagoon ecosystem services, the project devises and implements creative ways to address the critical gaps in environmental and ecosystem services conservation in the Fanga'uta Lagoon catchment through the establishment of an effective governance system and sustainable management of the lagoon ecosystems (Component 1); implement integrated environmental management approaches for improving conditions of critical habitats, productivity, water quality and fisheries in the lagoon catchment (Component 2); and strengthen knowledge and awareness of the Fanga'uta Lagoon ecosystem functions and associated socio-economic benefits within the national stakeholders and local communities (Component 3). Project interventions, which is structured according to these three interconnected components, have been designed and developed through a participatory process facilitated by the Pacific Islands R2R PFD stage and subsequent consultations with the Tongan Government and other stakeholders.

Project Period:	2014-2017
Atlas Award ID:	00077082
Project ID:	00088086
PIMS #	5219
Start date: July 2014	
End Date: December 2017	
Management Arrangements:	NIM
PAC Meeting Date: 28 Nov 2013	

Total resources required (total project funds): $ 8,406,880

Total allocated resources
(UNDP managed funds)

UNDP (in-kind): $ 500,000

GEF: $1,756,880

Other (partner managed resources)

National and Local Governments: $650,000

Non-Government Partners and collaborators: $5,500,000

Agreed by Government of Tonga: CEO - Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications

4th September 2014

Mr Paula Ma'u

Agreed by UNDP: UNDP Resident Representative

4th September 2014

Ms Osnat Lubrani

TABLE OF CONTENTS

LIST OF TABLES **5**

ACRONYMS **6**

SECTION I: ELABORATION OF THE NARRATIVE **8**

PART I: BACKGROUND AND SITUATION ANALYSIS 8
1.1 INTRODUCTION *8*
1.2 ENVIRONMENTAL CONTEXT *8*
1.3 SECTORAL, INSTITUTIONAL AND POLICY CONTEXT *14*
1.4 THREATS, ROOT CAUSES AND IMPACTS *17*
1.5 PROTECTED AREA COVERAGE AND STATUS *21*
1.6 STAKEHOLDER MAPPING AND ANALYSIS *22*
1.7 BASELINE ANALYSIS AND GAPS *23*
1.8 LINKAGES WITH OTHER GEF AND NON-GEF INTERVENTIONS *25*
PART II: INTERVENTION STRATEGY 28
2.1 PROJECT RATIONAL AND POLICY CONFORMITY: FIT TO GEF-5 FOCAL AREA STRATEGIES *28*
2.2 PROJECT GOAL, OBJECTIVE, OUTCOMES AND OUTPUTS/ACTIVITIES *29*
2.3 PROJECT INDICATORS *43*
2.4 RISK ANALYSIS AND KEY ASSUMPTIONS *44*
2.5 INCREMENTAL REASONING AND EXPECTED GLOBAL, NATIONAL AND LOCAL BENEFITS *46*
2.6 PROJECT CONSISTENCY WITH NATIONAL PRIORITIES OR PLANS *47*
2.7 COUNTRY OWNERSHIP: COUNTRY ELIGIBILITY AND COUNTRY DRIVENNESS *48*
2.8 SUSTAINABILITY, REPLICABILITY AND POTENTIAL FOR SCALING UP *48*
2.9 PUBLIC AWARENESS, COMMUNICATIONS, AND MAINSTREAMING STRATEGY *49*
2.10 ENVIRONMENTAL AND SOCIAL SAFEGUARDS *49*
PART III: PROJECT IMPLEMENTATION ARRANGEMENTS 50
3.1 IMPLEMENTATION AND INSTITUTIONAL FRAMEWORK *50*
3.2 STAKEHOLDER INVOLVEMENT *51*
PART IV: MONITORING AND EVALUATION PLAN 53
4.1 MONITORING AND REPORTING *53*
4.2 INDEPENDENT EVALUATIONS, AUDITS AND FINANCIAL REPORTING *54*
4.3 Learning and knowledge sharing: *54*
4.4 Communications and visibility requirements: *55*

SECTION II: STRATEGIC RESULTS FRAMEWORK (SRF) AND GEF INCREMENT **56**

SECTION III: PROJECT BUDGET, WORKPLAN AND TIMETABLE **71**

SECTION IV: ADDITIONAL INFORMATION **81**

PART I: OTHER AGREEMENTS 81
PART II: TERMS OF REFERENCES 86

List of Tables

Table 1. Mean Monthly Rainfall (R) and Mean Monthly Temperature (T) Vaini (2013), Tongatapu...
Table 2. Summary of Critical Physical Features of the Fanga'uta Lagoon and Their Implications for IEMP .....
Table 3. Summary of Critical Threats, Known Root Causes and Existing/Potential Impacts on Ecosystems of the Fanga'uta Lagoon Catchment and Communities .....
Table 4. Project Indicators and End-of-Project Targets .....
Table 5. Project Risks Assessment and Mitigation Measures .....
Table 6. M&E Activities, Responsibilities, Budget and Timeframe .....

List of Figures

Figure 1. A Map of the Kingdom of Tonga .....
Figure 2. A Map of the Tongatapu Island and the Fanga'uta Lagoon .....
Figure 3. A Map of the Fanga'uta Lagoon and Its Catchment Areas .....
Figure 4. Project Management Structure and Organigram .....

List of Annexes

Annex A. Tracking Tools

Annex B. Environmental and Social Screening Procedure

Annex C. Environmental Management Plan for Fanga'uta Lagoon System (2001)

ACRONYMS

ADB	Asian Development Bank
CBD	Convention on Biological Diversity
CCA	Climate Change Adaptation
CSR	Corporate Social Responsibility
DRR	Disaster Risk Reduction
EAFM	Ecosystem-based Approach to Fisheries Management
EBM	Ecosystem-based management
ECCO	Environment and Climate Change Office, Tonga
EMP FLS	Environmental Management Plan for Fanga'uta Lagoon System
FLC	Fanga'uta Lagoon Catchment
FLCMC	Fanga'uta Lagoon and Catchment Management Committee
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIWA	Global International Waters Assessment
GIZ	German Agency for International Cooperation
GOT	Government of Tonga
ICM	Integrated Coastal Management
IEMP	Integrated Environmental Management Plan
IIMS	Integrated Information Management System
IRBCAM	Integrated River Basin and Coastal Area Management
IT	Information Technology
IUCN	International Union for the Conservation of Nature (World Conservation Union)
IW	International Waters
IW:LEARN	International Waters Learning Exchange and Resources Network
IRRF	Integrated Results and Resources Frameworks (UNDP Strategic Plan 2014-2017)
KBA	Key Biodiversity Area
LOI	Letter of Intent
MAFFF	Ministry of Agriculture, Food, Forests and Fisheries, Tonga
MCTL	Ministry of Commerce, Tourism and Labour, Tonga
MDG	Millennium Development Goals
MESCAL	Marine Ecosystems for Climate Change Adaptation and Livelihoods
M&E	Monitoring and Evaluation
MFNP	Ministry of Finance and National Planning, Tonga
MI	Ministry of Infrastructure
MIA	Ministry of Internal Affairs, Tonga
MEECCDMMIC	Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications
MOA	Memorandum of Agreement
MoH	Ministry of Health
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSP	Medium-Sized Project
NBSAP	National Biodiversity Strategic Action Plan
NCC	National Coordinating Committee
NECC	National Environment & Climate Change Committee
NFP	National Focal Point
NGO	Non-Governmental Organization

NSPF	National strategic Planning Framework
PCC	Project Coordinating Committee
PFD	Program Framework Document
PES	Payments for Ecosystem Services
PPP	Public-Private Partnership
PPCR	Pilot Program for Climate Resilience
R2R	Ridge to Reef
PSC	Programme Steering Committee
SAP/NAP	Strategic Action Plan / National Action Plan
SBAA	Standard Basic Assistance Agreement
SGP	Small Grants Programme of GEF/UNDP
SMP	Special Management Area
SPREP	Secretariat of the Pacific Regional Environment Programme
SRF	Strategic Results Framework
STAP	Scientific and Technical Assessment Panel
TANGO	Tonga Association of Non Government Organisations
TPLM	Total Pollution Load Management
TPR	Tripartite Review
TWB	Tonga Water Board
UN	United Nations
UNDP	United Nations Development Programme
UNDP MCO	UNDP Multi-Country Office, Fiji
WDPA	World Database on Protected Area
WSSD	World Summit on Sustainable Development

SECTION I: ELABORATION OF THE NARRATIVE

PART I: BACKGROUND AND SITUATION ANALYSIS

1.1 INTRODUCTION

1. The proposed project is developed in accordance with the goal of the Pacific Islands National Priorities Multi-Focal Area 'Ridge-to-Reef' (R2R) Program *to maintain and enhance Pacific Island countries' ecosystem goods and services (provisioning, regulating, supporting and cultural) through integrated approaches to land, water, forest, biodiversity and coastal resource management that contribute to poverty reduction, sustainable livelihoods and climate resilience*. To attend the overall goal, each of the Pacific Islands countries adopts specific aspects of R2R to address national priorities and development needs while delivering global environmental benefits in line with GEF focal area strategies. The Pacific Islands R2R program has been designed by the Pacific Island countries to strategically use their GEF STAR allocations to meet both their national priorities and adhere to relevant GEF focal area objectives, outcomes, indicators and outputs.

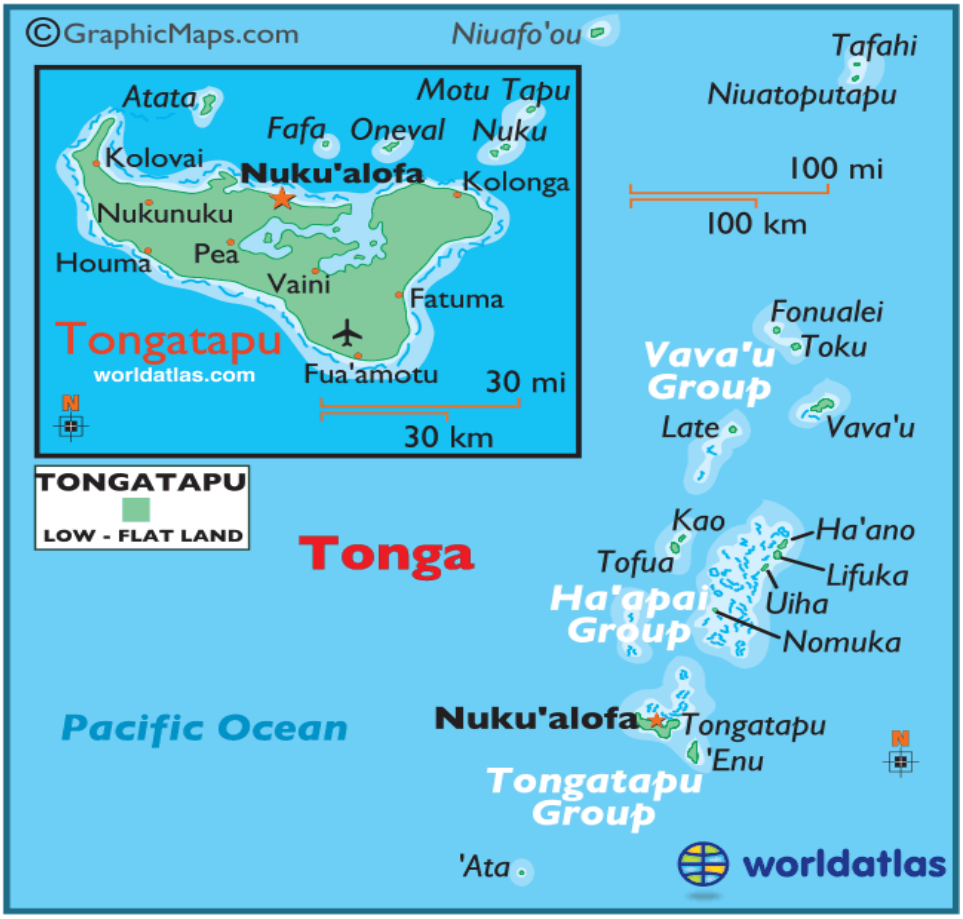
2. Under the Pacific Islands R2R Program framework, the Kingdom of Tonga has proposed two national R2R projects which will strengthen and expand marine and terrestrial protected areas, enhance carbon storage through restoration of damaged forests and farmlands, build national climate resilience, and strengthen capacity for integrated water resources and coastal management. The first proposed project (FAO-supported) will focus on sustainable land and agro-ecosystem management system for Tonga. The second proposed project (UNDP-supported) will focus on improving management of ecosystem services in existing marine protected areas (the Fanga'uta Lagoon) through integrated approaches to land, water, forest, biodiversity and coastal resource management.

3. This proposed project on Integrated Environmental Management of the Fanga'uta Lagoon Catchment will be implemented within the framework of the Pacific Islands R2R Program. Lessons learnt and good practices from the project implementation will be documented, disseminated and exchanged both nationally and regionally utilizing national project management deliverables and regional program coordination functions for managing information and knowledge developed by the Pacific Islands R2R Program.

1.2 ENVIRONMENTAL CONTEXT

4. Tonga is located in the central South Pacific. It lies between 15° and 23° 30' South and 173° and 177° West (see Figure 1). The island Kingdom has a combined land and sea area of 720,000 km^2. It is an archipelago of 172 named islands with an area of 747 km^2 of which 36 islands are inhabited with an area of 649 km^2. Tongatapu Island is 257.03 km^2 (or 260.48 km^2 with neighboring islands) in area and about 40 km in length. It is an uplifted Pliocene/Quaternary coral reef, which lies on a geologically active zone along the edge of the Fijian and Pacific plates and has been progressively uplifted and tilted in very recent geologic time. There is no river or stream on the island, and relief is mostly flat to gently undulating, with only minor areas of rolling slopes around the southern and eastern coasts. The shallow, almost completely closed Fanga'uta and Fangakakau Lagoons (hereinafter referred to as "the Fanga'uta Lagoon") are an important breeding ground for birds and fish as they live within the mangroves growing around the lagoon's shores. The lagoons were declared a Marine Reserve in 1974 by the government.

Figure 1: A Map of the Kingdom of Tonga



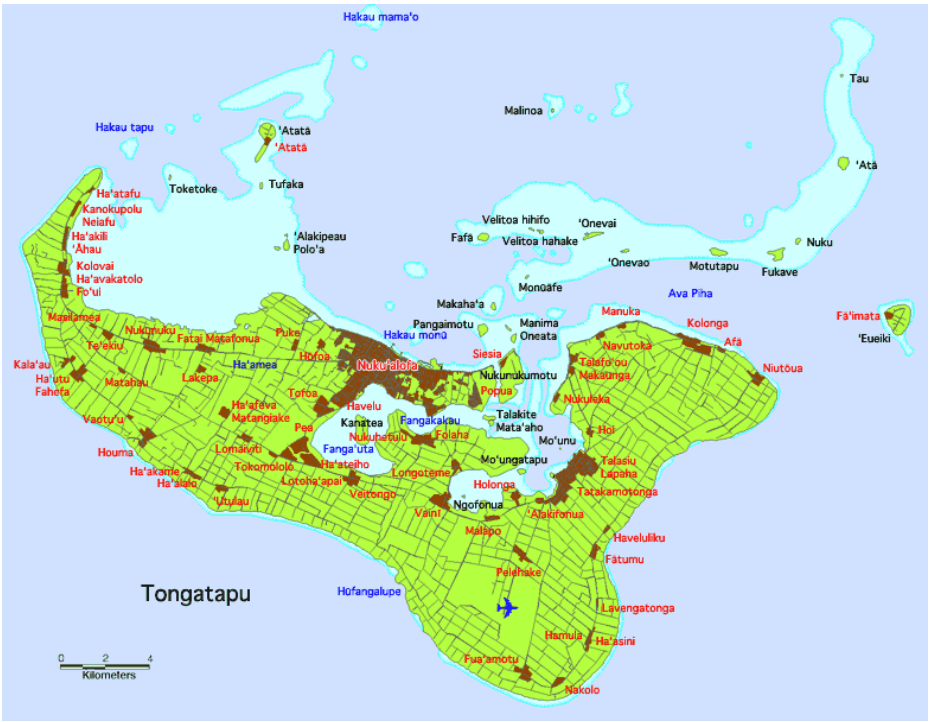
5. The Fanga'uta Lagoon encompasses an area of 28.35 km^2 with a mean depth of about 1.4 m and a maximum of 6 m, excluding the entrance channel (Zann *et al*., 1984), and the total volume of the lagoon is 38,000 megalitres. The lagoon is composed of two branches: the Nuku'alofa (or the western) branch and the Mu'a (or the south-eastern) branch (see Figure 2). The Nuku'alofa branch is made up of a wide channel called the "Folaha Sector" and a broad basin surrounding the Kanatea Island called the "Pe'a Sector" – the shallowest area (mean depth 0.8 m). The Mu'a branch is made up of the "Mu'a Sector" and the "Vaini Sector." The two branches of the Fanga'uta Lagoon are separated from each other and from the ocean by a complex of reefs and channels with distinct passes. The main opening consists of a deep channel (5.6 m depth) and a wider, shallower intertidal reef flat (+0.2 m to -1.0 m chart datum) (Zann *et al*., 1984). The southern end of this entrance pass subdivides into several channels, which feed the two major branches, and is further restricted by the Talakite Island and the Mata'aho Island.

6. A substantial difference in tidal cycles both in height and time of tidal range between the ocean and the lagoon's sectors has been observed[1] with the lagoon tide (in the Nuku'alofa branch) lagging 3-4 hours behind the ocean (Zann *et al*., 1984; Damlamian, 2008). This is attributed to the geometry of the reef flats and channels which constrain the tidal circulation in the lagoon. In spite of the geometry restriction, it has

[1] Zann et al., 1984; and Damlamian, H. 2008. *Hydrodynamic Model of fanga'uta Lagoon, Tonga: Water Circulation and Applications*. EU EDF 8 – SOPAC Project Report 135. Pacific Islands Applied Geoscience Commission, Suva, Fiji. 22p.

been concluded that the circulation in the lagoon is driven predominantly by tides. The average length of residence time (the average time water spends in the lagoon: lagoon volume divided by the inflow or outflow rate) in the lagoon is about 23 days in Pe'a Sector (Prescott *et al*., 2001[2]). A study (Damlamian, 2008) reported that since the two branches of the lagoon have a different connection with the entrance channel, a specific surface elevation delay and tidal range should occur in Pe'a and Vaini Sectors. Pe'a Sector circulation, which is perhaps restricted by the Kanatea Island, has the longest residence time; while the Vaini Sector with much lower residence time of 9 days is fairly well mixed with ocean (Zann *et al*., 1984). This means that in the more isolated parts of the lagoon, particularly in the Pe'a Sector, exchange of water with the ocean is small and freshwater inputs from surface and ground waters are a critical physical feature of the lagoon environment.

Figure 2: A Map of the Tongatapu Island and the Fanga'uta Lagoon



7. The climate of Fanga'uta Lagoon is oceanic tropical with hot humid summers and warm winters. Table 1 shows rainfall and temperature in the lagoon area. Air temperatures are about 5°C different between the warmest month (February) and the coolest months (July-August). Rainfall in the Tongatapu Island has high variability from year-to-year. Nuku'alofa receives about three times as much as rain in the wettest years as in the driest years. Almost two-third of the annual rainfall comes during the wet season from November to April. The remainder falls in the dry season from May to October. This reflects the importance of the South Pacific Convergence Zone (SPCZ) on rainfall in the Fanga'uta Lagoon and in Tonga, which is most intense during the wet season. According to a new research on climate change in the Pacific,[3] the intensity and frequency of days of extreme rainfall and extreme heat are projected to increase over course of the 21st

[2] Prescott, N. *et al*. 2001. *Environmental Management Plan for Fanga'uta Lagoon System*. n.p.
[3] Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation (CSIRO). 2011. Climate Change in the Pacific: Scientific Assessment and New Research, Volume 2: Country Reports. http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/PCCSP_Report_Vol2_FULL_120202.pdf

century. Whereas annual and wet season rainfall at Nuku'alofa has decreased since 1950, rainfall patterns are projected to change over this century with more extreme rainfall days expected.

Table 1: Mean Monthly Rainfall (R) and Mean Monthly Temperature (T) Vaini (2012), Tongatapu

	J	F	M	A	M	J	J	A	S	O	N	D	Total
R	273.3	278	217.5	240.2	130.6	119	116.2	154.2	144.7	113.2	160.3	220.6	205.7
T	25.5	26	25.5	24.5	22.5	21.5	20.5	20.5	21	22	24	25	23.2

8. The Fanga'uta Lagoon is an enclosed, soft-bottom, shallow tropical lagoon system. It supports several types of very diverse and productive ecosystems, including mangroves, mudflats, seagrass beds, and coral patch reefs. The lagoon also contributes to the sustainability of the Tongatapu Island's coastal fisheries. The fauna and flora of the Fangan'uta Lagoon system is relatively diverse (Zann *et al*., 1984; Prescott *et al*., 2001): 96 species of fishes; 9 species of large algae (macroalgae); 2 species of seagrasses; 16 species of near-shore plants; 1 species of jellyfish; 1 species of sea anemones; 30 species of hard and soft corals; 40 species of mollusks (including octopus, clams and other shellfish); over 13 species of crustaceans; and over 11 species of echinoderms (starfish, cucumbers and urchins). The distribution of mangroves around the lagoon is well known, whereas the distribution of seagrasses has been more difficult to determine due to the poor water clarity and the lack of recent aerial photographs.

9. According to Tonga's National Biodiversity Strategy and Action Plan (NBSAP, 2006), the Kingdom has approximately 1,000 hectares (10 km^2) of mangrove area with the largest area, of 50 hectares (5 km^2), located in the Fanga'uta lagoon. A recent report reveals that only 3.36 km^2 of mangroves remain in the Kingdom.[4] Tonga has eight (8) mangrove species (Ellison, 1998[5]). Two of the most common species in Tonga and on the main island of Tongatapu are *Rhizophora samoensis* and *Rhizophora stylosa* (Prescott *et al*., 2001). The mangrove areas have significant uses for local people, providing nursery ground for many fish and crustaceans as well as being traditionally exploited for construction wood, the gathering of crabs, fish and fuel wood, and used for local medicines, dyes and tannins. In 1983, it was found that 44.5 km (of the total 58 km) of the Fanga'uta lagoon system shoreline were covered by mangrove forests (Zann et al., 1984). The coverage was found to be greatest in the western sections in the Pe'a Sector and the Folaha Sector (Fangakakau) (about 30 to 35 km), with only about 14 km of coastline covered by mangroves in the eastern sectors out of a shoreline length of 24 km. The mangrove area along the southern coast of the Mu'a Sector is very narrow due to primarily consisting of raised limestone making it less suitable for mangrove growth. The mangrove cover has since significantly reduced with losses and threats from coastal developments and land reclamation, particularly on shores adjacent to Nuku'alofa, unsustainable stripping of the mangroves for tannins for *tapa* making and medicine, and cutting the mangroves for firewood and building materials.

10. Studies in 1980s (Zann *et al*., 1984; Naidu *et al*., 1997[6]) indicated that changes had continuously occurred in water quality of the Fanga'uta Lagoon. These studies found that water clarity was relatively clear (most readings >1m) with possibility to see (from aerial photographs) areas of seagrasse and coral reefs to depths of at least 2m, but sewage-related contamination with high nutrient concentrations was also recorded. Since early 1990s, the lagoon system was undergoing significant changes. Information was emerging during this time that the lagoon was occasionally turning green, that turbidity was increasing, that fish catches continued to decline, that many species of seagrasses became covered in algae, and that more mangrove areas were being cleared. By that time, many of the lagoon beaches were converted to seawalls and sewage was a common component of storm water entering through drains. Over the last decades, in the absence of a multi-

[4] Hoifua 'Aholahi. 2013. *Mangroves of Tonga*. http://www.livingoceansfoundation.org/mangroves-of-tonga/
[5] Ellison, J. 1998. *First Report on Development of a Mangrove EMP for Tongatapu*. TEMPP Report. n.p.
[6] Naidu, S. *et al*. 1991. *Fanga'uta Lagoon, Tongatapu, Tonga*. In Water Quality Studies on Selected South Pacific Lagoons. UNEP Regional Seas Report and Studies No. 136 and SPREP Report and Studies No. 49. pp. 78-84.

sectoral consensus on how to achieve sustainable management of the lagoon's ecosystem services and an integrated approach, the ecological conditions of the Fanga'uta lagoon system have continued to decline contributing to growing concerns of the limits to the lagoon's ecosystem productivity.

11. Since late 1980s, sewage-related problems and pollution entering the lagoon were increasingly reported. Pollution in the lagoon system comes through direct dumping, groundwater, and run-off from the land and pollution that is made inside the lagoon as a result of human disturbance. Direct dumping and littering involves cans, paper, plastic, car tires, batteries, timber, masonry and other rubbish. Some items are thrown along the shores of the lagoon and then washed into it during storms. Other items such as gillnets and floats, may be lost by fishermen. Approximately 26,000 m^3 of freshwater are flowing into the lagoon every day from the groundwater reservoir around the lagoon. This water falling as rain on the land can collect pollution and carry it into the groundwater. The pollution may be sewage from leaking septic tanks, pesticides and chemical fertilizers from agricultural areas, waste oil, asbestos roofing, or a cocktail of chemicals found in garbage dumps (e.g. Popua).

12. Overall conditions of water quality and pollution in the lagoon were recorded at worst during the periods in November/December 1998 through February 1999 (Prescott et al., 2001). There were elevated fecal coliform counts during February 1999 at all sections of the lagoon except the Mouth and Mu'a. There is no centralized reticulated sewerage system in the lagoon areas as well as in the whole Kingdom (National IWRM Diagnostic Report, 2007[7]). All wastewater is managed by on-site systems, with supervision by the Ministry of Health (MOH) when resources permit. In this respect wastewater management is in the hands of the community. Poorly constructed or inappropriate sanitation systems are common, resulting in the potential for pathogens and nutrients being introduced into the surrounding environment, including ingress to groundwater. Excess nutrient loads appear to be impacting the environmental health of the near shore reef in the Nuku'alofa area, and the lagoon in general. Algal growth can be seen in both areas. In addition, there are concerns that fish harvested in these areas, particularly shellfish, may be contaminated.

13. The Fanga'uta lagoon watershed or catchment is the area of land around the lagoon system that slopes towards the lagoon (Figure 3), approximately defined by the 20 m contour in the south and east, the 5-10 m contours in the west and the 10-15 m contours in the northeast. The watershed boundary of the lagoon covers an area of about 80 km^2 (Zann *et al*., 1984). It is naturally divided into four sectors, comprising: the Pe'a Sector (34 km^2) in the southwest; the Folaha Sector (7 km^2) adjacent to Nuku'alofa; the Vaini Sector (23 km^2) in the southeast; and, the Mu'a Sector (16 km^2) in the east and north. The majority of the lagoon watershed area is gently sloping to almost flat, having general slopes of 0.5-1.0%, though there are small areas of land with slopes of up to 5%. Some slopes are up to 3 km in length; however, the generally small slope percentage and high degree of cover appear to reduce displacement of soil by raindrop impact to negligible levels. Land use and habitat modification inside the catchment will affect the lagoon through runoff and groundwater seepage. A study (Chisholm, 1998[8]) found soil movement and erosion at villages adjacent to the lagoon where pigs have access to the shoreline and mudflats. There are also sediment inputs from reclamations immediately adjacent to the lagoon.

14. The shoreline of the Fanga'uta Lagoon is bounded by a main road that acts as a sediment trap. Village communities commonly reside in relatively urbanized lands on the lagoon side of the road. Urban development and illegal cutting have markedly decreased the stands of mangroves during the past decades. Pigs are commonly found living on wastes in the mangroves and cause local areas of erosion and mangrove loss. There are high levels of human impact on the mangroves of the lagoon system (Ellison, 1999[9]). The

[7] National Integrated Water Resource Management Diagnostic Report, Tonga. 2007 (November). GEF/UNDP/ UNEP Sustainable Integrated Water Resources and Wastewater Management in Pacific Island Countries. Draft SOPAC Miscellaneous Report 646

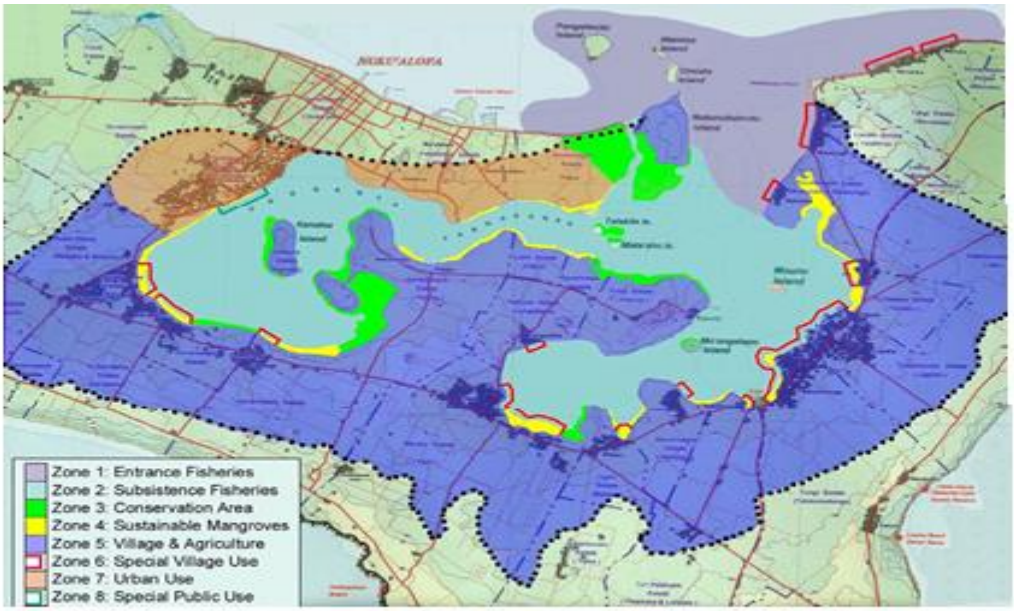
[8] Chisholm, R. 1998. *Report on sedimentation of Fanga'uta and Fangakakau lagoons and the management of their catchment*. TEMPP Reports. n.p.

[9] Ellison, J. 1999. *Second Report on Development of a Mangrove EMP for Tongatapu*. TEMPP Report. n.p.

most common of mangrove destruction in the lagoon system are the cutting of trees, dumping of rubbish, sewage discharge, and reclamations for the construction of houses. A significant area of mangroves has been lost from two areas within the lagoon system. These losses have been recorded at the Mu'a and Pe'a/Ha'ateiho areas of the lagoon through examining old aerial photographs. Local residents report this dieback has occurred since the early 1980's, and this has resulted in reduction of the abundance of fish in the area. An analysis of the air photographs at both Mu'a and Ha'ateiho gives evidence of selective clearance of the landward *Bruguiera*/*Excoecaria* zone of mangroves. These species are most valued for construction wood and for dyes. Field survey showed many examples of mechanical damage to the mangrove trees as a result of human cutting. Trees that had not been cut looked healthy, which indicates no broad-scale ecological problem such as increase in salinity (Ellison, 1998). Much of the mangrove area between Nukuhetulu and Veitongo in the Pe'a Sector has been subdivided for urban and agricultural development. The loss of such a large area of mangroves in the lagoon is expected to be dangerous to lagoon health, and ultimately to the humans who rely on it.

15. Freshwater enters the Fanga'uta lagoon system through rain, groundwater seepage, surface runoff and stormwater drains. The amount of rainfall runoff into the lagoon is relatively small, even in the wet season, due to rapid infiltration (except where soil structure has been degraded or where there are soils of naturally low infiltration rate). Surface runoff is only a problem during very heavy rain or storms. In contrast, groundwater seepage into the lagoon is significant. Up to 26,000 m^3 per day of freshwater is thought to flow into the lagoon from diffuse subsurface sources (Zann *et al*., 1984).

Figure 3: A Map of the Fanga'uta Lagoon and Its Catchment Areas



Fanga'uta EMP Map.
The map shows the main ecological boundaries for the lagoon, including the watershed and mullet spawning grounds. Also shown are the eight management zones proposed for the EMP.

Table 2: Summary of Critical Physical Features of the Fanga'uta Lagoon and Their Implications for IEMP

Key Feature	Characteristic	Implications for IEMP
Geology	Lagoon formed by tilting, then uplifted	Shallowness is at least partly attributable to uplift event in 1750, but ecological adjustments to this would have long since been made
	No rivers or streams	Freshwater inflow are filtered through the soil and groundwater
Circulation and tides	High residence time for water and low tidal range, particularly in Pe'a	Potential for eutrophication is high, impacts from dredging could be very high
Freshwater	Runoff limited, most water moves by evapotranspiration or infiltration	Freshwater inputs are largely filtered through the soil and enter as groundwater
	May be some run-off during heavy storms	Sediments may be washed into the lagoon at these times
	Groundwater seepage	Significant, contributes most of the 26,000 m^3 per day entering the lagoon
Soils	Formed from volcanic ash	Do not release much phosphorus into the groundwater
	Some acid-sulphate soils	On drying / exposure to oxygen may result in very acidic conditions
Vegetation	Cover in catchment is generally good	Limits amount of sediment which can move into the lagoon
Farming	Pesticides and fertilizers	Can move into lagoon through groundwater and wind and are a risk to humans and fisheries
Sedimentation	Low relief in catchment, good cover by vegetation, road acting as silt trap	Little movement of land sediments into lagoon except during heavy storms. There may be significant contributions from increasingly common reclamations

Source: Prescott *et al*., 2001.

1.3 SECTORAL, INSTITUTIONAL AND POLICY CONTEXT

16. The Fanga'uta lagoon watershed has both urban and agricultural uses. Agriculture, including tree plantations, is the major economic activity in Tonga and it has remained the principal sector ever since, particularly its significant contributions to the local economy as a major source of food, cash income, employment, GDP and foreign exchange. Agriculture activity consists principally of growing crops, coconut plantations, and fruit trees for local consumption and also for exports. Most households derive a major part of their basic requirements from the cultivation and utilization of land resources. As a source of foreign exchange through exports, agriculture is by far the most important sector and accounts for a significant proportion of export earnings. Squash, kava and vanilla are still the country's principal export commodities while watermelon, coconuts, and root crops are gaining importance. The main agricultural activities in the Fanga'uat lagoon catchment are coconut (*Cocos nucifera*) estates with an understorey of a wide range of annual and perennial crops. Other introduced species of vegetation include ifi or Tahitian chestnut (*Inocarpus fagifer*), breadfruit (*Artocarpus altilus*), and legumes leucaena (*Leucaena leucocephala*) and sesbania (*Sesbania grandiflora*) found in bush fallows. The lagoon watershed is cultivated using a low intensity system of bush fallows which results in about 30 percent or less of the landscape being fallowed at any time with an impressive degree of cover, which is seldom less than 75%. Cultivated crops include fruits (bananas,

citrus, pawpaw, mango), root crops (cassava, yams, taro) and vegetables (carrots, cabbage, lettuce, Irish potato, and pumpkin for export). The agricultural methods used are mostly low input, although increasing use is being made of mineral fertilizers (NPK blends and urea), and a range of fungicides, herbicides and insecticides for pest control, particularly for pumpkins (Chisholm, 1998).

17. In general, Tonga has had one of the highest rates of subsistence production for own consumption in the Pacific region. Despite the evidence of poor performance in the agricultural sector (with zero growth) over the past five years, according to the government's National Strategic Planning Framework (NSPF 2010), the sector is still the mainstay of the rural economy as it provides food security; employment and income for many households. In particular, for households in the rural areas of Tongatapu and the outer islands, home production accounts for approximately one third of all food consumed. Commercial production and exports are dominated by a few primary products (squash, fish, vanilla, root crops and kava), making the economy vulnerable to changes in export markets. Increasing agricultural production for domestic consumption and for export is accorded high priority by the government.

18. Historically, Tonga's inshore, in particular the intertidal areas, has been subject to heavy fishing. This is because Tonga's marine tenure system is an open system, with the coastline open to everyone and not restricted to any particular group of people. As a result, all types of fishing have been used in this zone, ranging from commercial, artisanal to subsistence fishing. Since early 1970s, to meet the increased demand for fresh fish, traditional subsistence fishing techniques were replaced by more efficient monofilament gillnets, arrowhead fish fences, and a trawl fishery for penaeid prawns, and the use of explosives was common (Zann, n.d.[10]). In 1975, commercial fishing in the lagoon was banned in an attempt to reduce fishing pressure, but without strict enforcement. The existing lagoon fishery is broadly classified as subsistence, but includes commercial elements, as many fishers sold at least part of their catch in local markets or by the side of the road as a source of income, or to cover costs of fishing gear. There has still been a dramatic decline over the years with fishers near the mouth of the lagoon reporting a decrease in both sizes and weights of catches. The decline in size and abundance of many species in the catches of the lagoon appears to be due to a combination of increased fishing pressure, loss of habitat area and quality, as well as coastal developments (i.e. land reclamation, influx of nutrients, and other pollution sources). Information gathered during the household surveys in 2001 reveals that quantity and quality of fish and shellfish catches in the lagoon had declined over the years and were continuing to decline rapidly (Prescott *et al*., 2001).

19. Recent scientific studies in Tonga have shown that, in many places, coastal areas are already exploited at, or beyond, their maximum capacity (Tonga's Fourth National Report of the Convention on Biological Diversity, 2010). Sustainable management in the fisheries sector and conservation are currently priorities for the Fisheries Department. The Fisheries Management Act 2002 allows for the provision of special management areas (SMAs) and empowers the Minister to grant a community management control of its inshore resources. The main objectives of a community management plan are to enforce the authority to exclude outsiders from entering a SMA, to establish marine parks, and implement restrictions on harvested resources, including, size limits and catch amounts. Communities (6 just increasing to 8[11]) provide protection for valued species such as lobsters, clams and bech-de-mer. SMAs are generally considered to have been very successful in terms of in-shore fisheries management and several more communities have shown interest in becoming part of the SMA program. However, progress is slow due to lack of the Ministries resources and financial constraints (FAO, 2012).

20. Tourism, which is highly dependent on the quality of the coastal environment, is a major contributor to Tonga's economy. The tourism sector provides Tonga with an estimated annual $13 million TOP (US$7.2

[10] Zann, L. n.d. A Case History from Tonga: The Degradation of Fanga'uta Lagoon, Tongata. n.p.

[11] The community-based Special Management Areas (SMAs) of 'Atata, 'Eueiki, Ovaka, Ha'afeva, Felemea and 'O'ua islands, with Nomuka and Taunga having SMAs recently established. Ref: FAO. 2012. *Study to Assess Constraints, Potentials Increase the Understanding of Policy and Institutional Arrangements Needed to Enhance Synergies*. Report on a Scoping Mission in Samoa and Tonga: Agriculture and Tourism Linkages in Pacific Island Countries.

million) in gross revenues (Tonga Visitors Bureau Annual Report 2000). In 2010-11, Gross Value Added (GVA) for recreational, cultural and sporting activities rose by 5.9 percent, due to increased tourist expenditure[12]. Tourism expenditure in Tonga was estimated to be worth approximately 56 million TOP in 2013[13]; this equates to approximately 1,200 TOP per visitor. Tonga's tourism offers the most immediate potential for generating economic growth and income, but the level of growth for the tourism sector needs to be accelerated, as the growth rate has been low compared to many other Pacific countries. The Government of Tonga has finalized its Tourism Sector Roadmap 2014-2018 which will pave the way to improve the profile of Tonga's tourism products and its stepped up destination marketing initiatives. The Roadmap has projected, by 2020, tourism in Tonga will become the main source of income for Tongans generating over 100 Million TOP for the economy, representing over 30 percent of national GDP and increasing the number of those employed in the workforce through tourism to 4,000 employment in Tonga. To realize the development goal of the tourism sector, the main areas of governmental focus for the Roadmap include marketing, investment and business enabling environment, product development and industry standards, infrastructure, land use planning and environmental management, human resource development, and institutional roles and sector coordination.

21. According to FAO (2012), enhancing the performance of the key productive sectors in Tonga – tourism, agriculture and fisheries – is highlighted in the National Strategic Planning Framework (NSPF) published in 2010; and the importance of economic linkages between sectors is generally recognized by the government. Moreover, community development features among the important priorities of the NSPF to support all other initiatives and the Framework recognizes that "... there have been profound changes in the rural economy, with long-term decline being experienced in many of the primary and traditional industries, somewhat balanced by the growth of the service sector, diversification into new activities and the growing importance of tourism." A focus on community-based tourism 'would therefore provide a strong platform for enhancing synergies with the agriculture sector which is fundamental to livelihoods in rural areas.' The report focuses on opportunities for enhancing the tourism industry through the use of Tonga's rich agricultural systems as tourist attractions. For example, Tonga's Civil Society Forum organization is promoting organic farming through the Youth Congress with good political and financial support. The fisheries Special Management Areas mentioned earlier are already proving successful in enhancing fish stocks and conserving over exploited species which will enrich the environment for marine-based tourism activities. Tourism activities linked to farming systems and local food supports rural livelihoods and can help foster a more community-inclusive model of tourism development.

22. Currently, the management authority for Fanga'uta Lagoon is fragmented. Conservation and management efforts are institutionalized amongst different line Ministries. Under the Birds Act, Fanga'uta Lagoon is declared as a protected area, and the Prime Minister may by Order, with the consent of Cabinet, amend this declaration. However, this has not been active. Day to day operation is managed by the Environment and Climate Change (ECC) Office of the MEECCDMMIC. The institutional setting for managing Fanga'uta Lagoon has been multi-sectoral with the ECC Office playing an advisory role to other Ministries. The following is a summary of the institutional setup with regards to conservation and protected areas:

1. *Environment and Climate Change (ECC) Office, MEECCDMMIC*: The Office plays an advisory role to other Ministries and is responsible for drafting National Action Plans for Biodiversity and Climate Change in consultation with relevant stakeholders, as well as seeking financial assistance for implementation. Surveys and monitoring programmes have been established

[12] The services sector (including hotels and restaurants, recreational, cultural and sporting activities) makes up more than 50 percent of GDP (783.4 millions TOP, 2010-11 preliminary estimate), although its contribution has decreased in the past two years due to the higher construction activity. In 2010-11 the service sector contribution to GDP (as measured in current prices) was 53.2 percent.

[13] Based Ministry of Tourism estimates – Summary of Tourism Arrivals Report – 2010. Ref: TRIP Consultants. 2013. Tonga Tourism Sector Roadmap: Situation Analysis and Tourism Sector Framework.

which are designed to assess and gather baseline information on important ecosystems and habitats, ecosystem services, including Fanga'uta Lagoon, Marine Protected Areas, and coral reefs. Regulations can be developed under the Environmental Management Act to enable sound management of the proposed multi-use management system for the Fanga'uta Lagoon;

2. *Land Management Office*, MEECCDMMIC: The Minister has the authority to declare an area in the coastal environment or on land, a Protected Area under the Parks and Reserves Act 1988. This Act is for the protection, preservation and control of any aquatic form of life and any other organic matter contained within this protected area boundary;
3. *Planning and Urban Management Division (PUMA)*: With the National Spatial Planning and Management Act 2012 come into effect on the 1st January 2014, PUMA will play an important role with regarding to land use and all related activities;
4. *Division of Fisheries, MAFFF*: The Division has responsibility for the conservation, management and development of fisheries in Tonga. The Fisheries Act 1989 gives authority to the Minister and DoF to conserve endangered inshore marine resources by enforcing size limits on certain marine resources. This Act gives the DoF responsibility of enforcing the penalty if an offender is caught breaking the law. It also establishes Special Management Areas (SMAs) to be co-managed by a community and government;
5. *Division of Forestry, MAFFF*: The Forest Act CAP 126 provides the Minister for Forests with the Cabinets consent to make regulations in areas of concern to Tonga's forests. The Forest Act also allows issuing of license in respect to forest produce. Tonga has a Forest Management Policy 2009, which defines core functions of the Department;
6. *Division of Tourism, MCTL*: The Division does not have direct responsibility with regards to Conservation. However, they have a supportive and enforcement responsibility to other relevant authorities where a co-management can exist to introduce guidelines and codes of practice for eco-tourism. Tourism Division has also introduced a code of practice for diving and snorkeling operators requiring them to comply with regulations and approved practices. MCTL also promotes people's awareness towards forests and tree planting and conservation;
7. *Tonga Trust (NGO):* The Tonga Community Development Trust (TCDT) is an indigenous, non-governmental development organization operating in the Kingdom of Tonga. TCDT provides community-based research and extension support to current activities;
8. *TANGO*: The Tonga Association of Non-Governmental Organizations works with the Tongan government on community awareness programmes;
9. *Civil Society*: The NGO provides financial support to implement related national projects under the Small Grants Programme; and
10. *Tonga National Fisheries Association*: TNFA is an umbrella NGO for fisheries, working to advocate and assist in raising public awareness through its members (subsistence, artisanal, and commercial fishermen).

1.4 THREATS, ROOT CAUSES AND IMPACTS

23. The Fanga'uta Lagoon has been particularly prone to natural and human disturbances. The combination of the changes in tidal depth and circulation following the geological uplift of the northern coastline of the Tongatapu Island, the introduction of new fishing technologies and high urban demands for fish, an expanding population complicated by the unique system of land tenure, and the high input of nutrients and pollution from urban and rural developments undertaken around the lagoon catchment, has seriously disturbed the ecology of the lagoon. Whereas some negative impacts on the lagoon ecosystems may be due to natural changes such as lagoon's hydrography, anthropogenic processes such as unsustainable land development, resource (particularly fisheries and mangroves) overexploitation, increased nutrients and pollution levels entered the lagoon directly and indirectly have had significant effects on the lagoon's already stressed ecological systems. Table 3 provides a summary of threats to the lagoon's ecosystems, their fundamental root causes and potential impacts.

Table 3: Summary of Critical Threats, Known Root Causes and Existing/Potential Impacts on Ecosystems of the Fanga'uta Lagoon Catchment and Communities

Threat	Status	Root Cause	Impact
Loss of biodiversity resources (fisheries)	Overfishing Fish kill in the lagoon	Excess demand for fish consumption Habitat loss Population increase Lack of an organized institutional framework and environmental legislation Lack of information, knowledge and inadequate awareness	Declining fish catches Threatened species (populations of mullet and edible mussels) Ecosystem health Human wellbeing (food security, income opportunities)
Habitat Degradation (mangroves, coral reefs, seagrasses)	Clearing of mangrove forests Reduced percent cover of living hard corals (only 10-20% alive) Threats to seagrass communities High human impacts Few remaining intact areas	Area developments and deteriorated water quality (dreading, sedimentation, high nutrients and turbidity, land reclamation, pig raising) Lack of an organized institutional framework and environmental legislation Lack of knowledge and inadequate awareness	Damage to coastal ecosystem Loss of habitats, foreshore protection Continuous decrease in fish catch rate Loss of resources for building, crafts, medicine, etc.
Water Quality Degradation and Pollution	Certain parts of the lagoon have shallowed Floating debris Water greenish and brownish most of the time suggesting high level of planktonic algae	Agricultural, urbanization and industrial development Lack of an organized institutional framework and environmental legislation Lack of information, knowledge and inadequate awareness	Loss of fisheries and other aquatic biodiversity and resources Damage to coastal habitats Ecosystem health Human wellbeing (sanitation and hygiene, income opportunities)
Unsustainable Land Use (agriculture; urbanization)	Increase in commercial agriculture Increased uses of fertilizer and pesticide Shortage of suitable land for residential and non-residential purposes Small-scale reclamation in Havelu village to	Increased urban population with increasing demand for land and the problems of increasing waste generation Lack of an organized institutional framework and environmental	Loss of native forest and general deforestation Loss of habitat and biodiversity User conflicts

Threat	Status	Root Cause	Impact
	extend property boundaries into the lagoon Titling of 'water' areas paving the way for reclamation	legislation Lack of information, knowledge and inadequate awareness Lack of information for planning and monitoring	
Natural Systems and Climate Change (complex semi-enclosed system, mean sea level rise)	constricted entrance to the ocean and consequent long residence times Potential for eutrophication Increased frequency of coastal flood inundation Potential intensity and frequency of extreme events	Unsustainable human development Lack of an adaptive management approach Lack of knowledge and inadequate awareness	Prone to natural and human disturbances Loss of ecosystem services Property damages

24. **Fisheries**: Fanga'uta Lagoon has been known for centuries to support a large mullet fishery and prolific edible mussels which have served the needs for the inhabitants of Nuku'alofa and other villages in the northern part of Tongatapu. In recent years, however, the populations of mullet and edible mussels have declined at an alarming rate to the present stage. Edible mussels have disappeared from some locations of the lagoon where known to be colonies for them. This decline has resulted from habitat losses, increasing population and a subsequent higher demand for fish consumption, and increased urbanization in Nuku'alofa areas, putting pressure on the lagoon resources through overfishing, dredging for building aggregate, increased land reclamation and mangrove encroachment, and some indiscriminate discharges of domestic and industrial wastes into the lagoon. Fish stocks are now significantly reduced in mangrove areas, the lagoon and bays, and on near-shore coral reefs. Overfishing resulted in the closure of the lagoon to commercial fishing during 1975-1981. However, there is little effective management and conservation of inshore fishery resources with no action taken to implement minimum harvest size, or impose export controls and closed seasons. Such actions are required to ensure sustainability and guarantee long-term benefits for the health of ecosystems and human wellbeing.

25. **Habitat degradation and coastal erosion**: The mangrove area of Tonga is small in global terms, but the community structure of mangroves in the Kingdom makes them unique among the world's mangroves (Ellison, 1998). The mangrove ecosystem, however, has been reduced in area by tree cutting or reclaiming areas. The resources have been damaged by unsustainable developments and uses including dredging, reclamation and domestically raised pigs. The mangrove areas have significant uses for local people, being traditionally exploited for construction wood, and the gathering of crabs, fish and fuel wood. Dredging in the lagoon affects the tidal height and the normal circulation of the lagoon. Land reclamation has resulted in the destruction and abuse of the mangrove areas, the sanctuary and breeding ground for marine aquatic organisms. Clearing of mangrove forests, construction of inappropriate seawalls, depletion of sand on beaches (beach sand mining was banned in 2007, but this is not strictly enforced), and the accumulation of solid wastes either washed onto the shore or in many cases deliberately dumped along the shore and in the mangroves have contributed to coastal erosion and loss of habitats in the lagoon. Continued land reclamation for town allotments from the shrinking mangroves forest in and around the Fanga'uta lagoon poses a serious threat to the mangrove ecosystem. Coastal encroachment will lead to pollution to the lagoon as a result of

human waste and rubbish disposals. The damage can be traced back to a lack of effective land-use planning and inequality in land allocation.

26. **Water quality and pollution**: Degraded water quality in the Faguata Lagoon is compounding the problem as excess nutrients and sediments result in eutrophication in coastal waterways, in seagrass beds and on coral reefs. Additional pollution of groundwater has occurred through the accidental or deliberate release of persistent organic pollutants (POPs) such as agricultural pesticides and PCBs used in electrical transformers and various industries. Existing levels of contaminants, in association with their persistence and trends in agrochemical usage, could compromise the future of the ecosystem including sustainable fisheries and the potential for developing aquaculture. Other activities in the area, namely those related to urban and industrial growth, cause additional impacts on the coastal lagoon system. The resultant pollution is damaging groundwater sources; thereby affecting the health of the human population and also threatening agriculture and animal husbandry. Sewage treatment is predominantly through the extensive use of domestic and small scale septic tanks, but these are poorly maintained and frequently leak sewage into soils and groundwater. Little data pertaining to the types and amounts of pollutants affecting the lagoon areas are available.

27. **Land tenure and land use**: There are no areas owned communally by resident communities in Tonga; the only large areas of land belong to the royal family and nobles (or chiefs), or is government land. The rest is held under lease from the nobles by individual Tongan males who are granted a parcel of land for small scale agriculture (from 2 to 4 ha) when they reach the age of 16. On the more densely populated islands like Tongatapu, however, there is a shortage of land and the granting of land may not be automatic. Land cannot be sold to non-Tongans, although it can be leased. The non-tradability of land under the existing tenure system (except leasehold) may contribute to sub-optimal land distribution. The shortage of suitable land for residential and non-residential purposes in and around the Nuku'alofa urban area has led the large number of urban migrants of recent years to settle in the swampy and low-lying areas of Sopu and Popua, and the mangrove areas of the Fanga'uta Lagoon. The increased pressure on land use is mainly related to population growth and socio-economic developments including commercial agriculture. Land reclamation around the lagoon is the main threat to the mangrove ecosystem. A number of key environmental issues and problems become apparent in the lagoon catchment as the Kingdom is facing a scarcity of land resources coupled with the increasing signs of land resources degradation such as underground water pollution, increased soil degradation due to the increase in commercial agriculture and increased uses of fertilizer and pesticide, loss of native forest and general deforestation, loss of habitat and biodiversity, and increased urban population with the problems of increasing waste generation. Rehabilitating degraded agricultural land is required to negotiate with many landholders to implement wide-scale improvements. The state of the land resources, however, is different to determine due to the information gaps, the lack of appropriate national indicators developed for the purpose of state of environment reporting, and no consistent monitoring to establish reliable trends.

28. **Natural systems and climate change**: A complex system with a constricted entrance to the ocean and consequent long residence times has made the Fanga'uta Lagoon particularly prone to natural and human disturbances. Increased nutrient levels directly and indirectly enter into the lagoon have partially had a significant effect on the ecology of the lagoon. The virtual extinction of *Acropora* spp in the sub-tidal areas may be due to changes in the lagoon's hydrography, and possibly the effects of increased nutrient levels. Potential for eutrophication is also high due to high residence time for water and low tidal range, particularly in the Pe'a Sector. Warming trends are evident in both annual and seasonal mean air temperatures at Nuku'alofa for the period 1950–2009, with the strongest trends in the wet season. There is an increased frequency of coastal flood inundation through a combination of storm surges and high tides with waves overtopping coastal defenses and increasing shoreline erosion, highlighting as critical evidence of climate change that requires urgent attention. Low-lying, heavily populated areas of Tongatapu are of most concern. Tonga's susceptibility to the impacts of climate change and disaster risks is principally due to its geographical, geological and socio-economic characteristics. Over the course of the 21st century (Australian Bureau of Meteorology and CSIRO, 2011), in Tonga: surface air temperature and sea surface temperature are

projected to continue to increase (very high confidence); wet season rainfall is projected to increase (moderate confidence); the intensity and frequency of days of extreme heat are projected to increase (very high confidence); the intensity and frequency of days of extreme rainfall are projected to increase (high confidence); and mean sea-level rise is projected to continue (very high confidence).

1.5 PROTECTED AREA COVERAGE AND STATUS

29. According to the World Database on Protected Areas (WDPA), the Fanga'uta Lagoon (Original Name: Fanga'uta and Fanga Kakau Lagoons – WDPA ID: 4241) is designated under the Bird and Fish Preservation Act as a national Marine Reserve and classified as IUCN Category VI – Protected Area with sustainable use of natural resources[14] on 1 January 1974. The total site area, as registered, is 28.35 km^2 covering marine, intertidal and subtidal zones.

30. As part of the activities implemented under the Tonga Environmental Management and Policy Planning (TEMPP) Programme (1997-2000), a series of studies on the decline of the health of the Fanga'uta Lagoon were undertaken and funded by AusAID based in the Department of Environment in collaboration with ten other government agencies[15], three NGOs[16], and more than 20 communities around the lagoon, resulting in the development of the Environmental Management Plan for Fanga'uta Lagoon System (EMP FLS) in 2001. The EMP FLS was developed in response to increasing pollution and decreasing of marine resources as observed by communities and through rigorous scientific inquiry. The lagoon's Environmental Management Plan was approved by the Cabinet in 2003[17], but no details on implementation (including financial and administrative commitments) were given. Due to serious budgetary constraints and other circumstances (i.e., lack of a coherent management approach, insufficient skilled manpower and unclear institutional arrangement)[18], implementation of the EMP FLS has been a challenge.

31. The Environmental Management Plan for Fanga'uta Lagoon System (EMP FLS) was designed to improve the existing conditions in the lagoon and ensure that it can provide the maximum use of goods and services in the future. The EMP is a guide for action by Government, and action by individuals taking responsibility for their own environment (see Annex E). To provide guidance for development and spread the benefits of the lagoon as fairly as possible, a multi-use zoning plan was developed, based on scientific information and the voice of communities. The EMP FLS defines the lagoon areas into eight (8) different usage zones within the lagoon's main ecosystem boundaries and the agencies and communities responsible

[14] IUCN category VI Protected Area with sustainable use of natural resources — is defined as "a generally more encompassing classification that is focused on the mutually beneficial correlation between nature conservation and sustainable management of natural resources in correspondence the livelihoods of those who are dependent on both. A wide range of socio-economic factors are taken into consideration in creating local, regional, and national approaches to using natural resources as a tactic to assist sustainable development rather than hinder it. Though human involvement is a large factor in the management of these protected areas, developments are not intended to allow for widescale industrial production. The IUCN recommends that a proportion of the land mass remains in its natural condition – a decision to be made on a national level, usually with specificity to each protected area. Governance has to be developed to adapt the diverse – and possibly growing – range of interests that arise from the production of sustainable natural resources.

[15] These agencies were Ministry of Education; Ministry of Fisheries; Ministry of Works; Tonga Water Board; Ministry of Health; Ministry of Agriculture & Forestry; Ministry of Labour, Commerce and Industries; Ministry of Marine & Ports; Tonga Visitors Bureau; and Central Planning Department.

[16] These NGOs included Langafonua, Tonga Trust and 'Aloua ma'a Tonga.

[17] Morrison, R. John & U. L. Kaly (2010) "Chapter 15 Coastal lagoon management in three Pacific island situations: – is scientific knowledge used effectively?" In Saving Small Island Developing States: Environmental and Natural Resource, edited by Shyam Nath, John L. Roberts and Yeti Nisha Madhoo. Commonwealth Secretariat, United Kingdom, page 178.

[18] Kingdom of Tonga. 2011. *Action Plan for Implementing the Convention on Biological Diversity's Programme of Work on Protected Areas*. Submitted to the Secretariat of the Convention on Biological Diversity.

for taking care of them. Each of the zones is identified with its own set of resources, stresses and human needs.

Zone 1: *Lagoon Entrance Fisheries Area* (the mouth of the lagoon and northern coast) – Subsistence and limited commercial fishing, and aquaculture; preserved as the migration routes of all fishes that spawn outside of the lagoon, and those whose juveniles use the lagoon as a nursery; habitat damaging activities such as dredging, reclamations and reef or seagrass damage are prohibited

Zone 2: *Lagoon Subsistence Fisheries Area* (the entire water area of the lagoon, including water beneath mangrove trees, except for the mouth and the area to the east of the mouth) – No commercial fishing, but subsistence fisheries; a one-year moratorium applied (30 April 2001-30 April 2002); fishing under conditions (i.e., species, time, gear and size limits)

Zone 3: *Conservation Areas* (the most important patches of mangroves in the lagoon and a few terrestrial areas) – Areas of mangrove forest for functioning as fish habitats and lagoon's cleaning system; no fishing; allowed for recreation, research, as well as collecting and harvesting of wood, mangrove roots and medicines without any harm to the mangrove system; EIAs to address risks to mangroves or coastal forests

Zone 4: *Sustainable Mangrove Use Area* (all remaining mangrove areas in the lagoon) – Sustainable use of the mangrove resources, including for wood, dyes and medicines; collection of fishes and other animals within the mangroves; usage without damaging the resources beyond their ability to recover and grow; rehabilitation of mangroves

Zone 5: *Village and Agricultural Uses* (most of the lagoon system watershed) – Village settlements and agricultural uses of the land; minimizing the movements of nutrients, mud, sewage and chemicals into the lagoon via the groundwater, any drainage systems or run-off; proper rubbish disposal

Zone 6: *Village Special Resource Use Areas* (specific to each village) – Restricted usage of lagoon resources in the areas set aside as exclusive use of the lagoon's resources in the area bound by the shoreline in front of a village and out to a line 50 m into the lagoon from Mean Low Water Mark (MLWM)

Zone 7: *Urban Use Area* (about half of the urban area of Nuku'alofa) – Urban settlement, industrial uses, and limited reclamations and seawalls; specific usage conditions and standard practices applied

Zone 8: *Special Public Use Areas* (the foreshores of the lagoon system of Nuku'alofa) – Public access for recreational, educational and other purposes.

32. As part of the POWPA 2011, a feasibility study on rehabilitating Fanga'uta and Fangakakau Lagoon Marine Reserve to assess and gather baseline information on important ecosystems and habitats will be implemented by MEECCDMMIC during the period of 2013-2018. In addition, mangrove replanting and ad hoc water quality monitoring activities have been implemented in the Fanga'uta Lagoon Marine Reserve through the through the Mangrove Ecosystems for Climate Change Adaptation and Livelihood (MESCAL) Project and small grants programmes supported by the Civil Society (NGO).

1.6 STAKEHOLDER MAPPING AND ANALYSIS

33. The primary level stakeholder in the implementation of this proposed project is the Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications (MEECCDMMIC) and key policy/legislative drivers. As the core government agency responsible for providing '*the fundamental basis for the achievement of high standard of living and quality of*

life for the people of Tonga at present and into the next generation, through sustaining the integrity of the ecosystems of Tonga to support life and livelihoods,' MEECCDMMIC will play a role of bridging and ensuring the collaboration and close communication between ministries and public entities having the mandate for biodiversity conservation and sustainable management of ecosystem services in the Fanga'uta Lagoon and catchment areas. Main activities will include: a) consultation with relevant stakeholders, as well as seeking financial assistance (co-financing), for updating the EMP FLS and for implementation of the FLC IEMP; b) information sharing and collaboration with concerned Cabinet members, relevant national committees and authorities on mangrove, fisheries, agriculture, land use, water quality and pollution, eco-tourism, marine and coastal resource conservation and management, either directly or through a project advisory body; and, c) exchanging best practices and lessons learned with other projects under the Pacific Island R2R Program at appropriate occasions as well as with other stakeholders at regional, national and local levels.

34. Other stakeholders at the national level include NGOs, academic and research communities, and concerned business sector representatives or developers. At the division and local levels, stakeholders include the division, district and village government units, NGOs, churches, local business groups, community organizations and local associations or co-operatives of farmers, fishers, and other resident groups dependent upon the lagoon space, catchment, resources and processes (for ecosystem services) such as pig farms, aquaculture producers and processing, shellfish and jellyfish gatherers, mangrove bark users, lagoon settlements, and tourism groups, particularly those are often operated by women and young people.

35. Whereas the main roles of the primary level stakeholder are to ensure political and executive support for the action strategy as well as to seek funding from all avenues, local stakeholders have become actively involved in planning and management of lagoon resources and ecosystems. Some local leaders and community representatives, including women and youth, have been trained and participated in the environmental monitoring exercises. The establishment of local environmental monitoring team in the FLC through the project training and capacity development activities will improve knowledge and awareness of local communities in the protection and conservation of the lagoon's ecosystems and their services. The involvement of local stakeholders and FLC communities in management of ecosystem goods and services of the Fanga'uta Lagoon through integrated approaches is vital to the future of the lagoon.

1.7 BASELINE ANALYSIS AND GAPS

36. The Fanga'uta Lagoon encompasses an area of 28.35 km2 with a mean depth of about 1.4 m and a maximum of 6 m, excluding the entrance channel, and the total volume of the lagoon is 38,000 megalitres. The shallow, almost completely closed Fanga'uta Lagoon supports several types of very diverse and productive ecosystems, including mangroves, mudflats, seagrass beds, and coral patch reefs. The lagoon also contributes to the sustainability of the Tongatapu Island's coastal fisheries. The fauna and flora of the Fangan'uta Lagoon system is relatively diverse: 96 species of fishes; 9 species of large algae (macroalgae); 2 species of seagrasses; 16 species of near-shore plants; 1 species of jellyfish; 1 species of sea anemones; 30 species of hard and soft corals; 40 species of mollusks (including octopus, clams and other shellfish); over 13 species of crustaceans; and over 11 species of echinoderms (starfish, cucumbers and urchins). According to Tonga's National Biodiversity Strategy and Action Plan (NBSAP, 2006), the Kingdom has approximately 1,000 hectares (10 km2) of mangrove area with the largest area, of 50 hectares (5 km2), located in the Fanga'uta lagoon. A recent report reveals that only 3.36 km2 of mangroves remain in the Kingdom. Tonga has eight (8) mangrove species; two of the most common species in Tonga and on the main island of Tongatapu are Rhizophora samoensis and Rhizophora stylosa. The mangrove areas have significant uses for local people, providing nursery ground for many fish and crustaceans as well as being traditionally exploited for construction wood, the gathering of crabs, fish and fuel wood, and used for local medicines, dyes and tannins.

37. In the baseline scenario, whereas the establishment of the EMP FLS is a significant accomplishment of the Kingdom, a number of challenges and constraints have been identified as the principal impediments to the realization of the EMP FLS objectives and the ultimate goal of sustainable services of the lagoon ecosystems, resulting in continuous decline in the abundant and diversity of the lagoon species and their habitats.

38. Implementation and enforcement of the EMP FLS has been a major problem which is due to:

- The lack of clear and direct mandate or ToR defining the roles, responsibilities and functions of 'a Lagoon Management Task Force' as recommended in the EMP FLS – however, since a task force is ad hoc and only exist until a specific goal is reached, to ensure sustainable management of the lagoon and its catchment, it is recommended that the Fanga'uta Lagoon Management Committee (FLMC) should be established with clearly defined mandate and appropriate representation from government, NGOs, private sector and communities; and,
- The lack of staffing and financial resources for operations – to ensure continuous management and protection of the FLC, there is a great need to deploy and maintain qualified staff and sufficient budget for implementation of the EMP FLS or the upgraded management plan, as well as for capacity building of governments at all levels and the FLC communities.

39. Sufficient baseline studies are taken to show that the biodiversity and water quality in the lagoon is diminishing. For effective management of the lagoon protected area, there is a need to mainstream environmental issues of the Fanga'uta Lagoon and its catchment that have contributed to sustainable development of the Kingdom into the national strategy development plans as well as in each institutional stakeholder operational plans.

40. The lack of functional enabling environments for conservation and integrated management of the lagoon and catchment areas and the lack of measurable key indicators for regular monitoring of the status of the lagoon environment and ecosystem services have further constrained the effort to '*improve the existing conditions in the lagoon and ensure that it can provide the maximum use of goods and services in the future*' as outlined in the EMP FLS.

41. UNDP has supported governance and promote democracy in Tonga particularly through the AusAID-funded Tonga Governance Strengthening Programme. As an integrated programme, the main strategy is to work with the Tongan Parliament, the Electoral Commission and civil society to increase their effectiveness and build community understanding of their roles. The AU$3.8 million programme for duration of 3 years (2013-2016) will develop the skills of parliamentarians to improve lawmaking processes and strengthen the ability of the Electoral Commission to manage free and fair elections. A key element of the integrated approach is to ensure consistency in the development of civic education materials to provide a better understanding in the community about the workings of Parliament, the Electoral Commission and elections as well as responsibility of civil society to help promote democracy in Tonga. Some of these activities are relevant to environment and the project is counting $500,000 as co-financing. The Tonga Governance Strengthening Programme is directly implemented by UNDP and managed under the guidance of a Programme Board co-chaired by the Permanent Secretary for Foreign Affairs and UNDP's Resident Representative.

42. Under the International Climate Initiative, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) support a US$10.6 million regional project on Marine and Coastal Biodiversity Management in Pacific Island Countries and Atolls (MacBio) as part of its international cooperation in the field of biological diversity. The MacBio Project will undertake economic valuations of marine and coastal ecosystems in the five project countries in order to contribute to national development planning. The project also aims to support current efforts to extend national Marine Protected Area networks through seascape-level planning and promoting effective approaches protected area management, including the recognition of locally managed marine areas and community-based conservation efforts through payments

for ecosystem services. For this MSP, $300,000 is counted as co-financing. The project duration is 5 years (2013-2018) and the implementation agency is GIZ in cooperation with SPREP and IUCN.

43. The *Mangrove Ecosystems Climate Change Adaptation and Livelihoods (MESCAL) Project* has assisted Tonga with effective management of mangrove and associated coastal ecosystems to support livelihoods and build climate change resilience. The Fanga'uta Management Plan was drafted based on mangrove surveys followed by planting and conserving of mangroves in selected sites. MESCAL is funded by Germany, under the International Climate Protection Initiative through the International Union for Conservation of Nature (IUCN) for US$ 350,000 during 2009-2013.

44. The proposed MSP, particularly efforts to update the existing EMP FLS, will benefit from the findings and recommendations of the *Water Monitoring Component, Integrated Urban Development Sector Project* in Nuku'alofa, which is funded by the Asian Development Bank. The goal of the Water Monitoring Component of the IUDSP is to assess the level of nutrient and bacteriological pollution of the groundwater in selected parts of Nuku'alofa and in the adjacent western part of Fanga'uta Lagoon. The water monitoring activities has collected water quality data in the Lagoon over the three year period June 2010 to May 2013. The data sets involve (a) three years of monthly water quality monitoring at 21 selected sites including nine monitoring pipes around the edge of Nuku'alofa, ten sites at the edge and within the Fanga'uta Lagoon and two Tonga Water Board wells and (b) a year and a half of monitoring at six additional sites including four Nuku'alofa wells and two nearby village wells. About $1.5 million is counted as co-financing for this project.

45. The *Pilot Program for Climate Resilience* is the only adaptation funding from the Climate Investment Fund (CIF) from the multilateral development banks (MDBs) to finance climate change support for developing countries and assist transformation to a climate resilient development path, consistent with poverty reduction and sustainable development. The Asian Development Bank (ADB) is assisting Tonga to formulate the Strategic Program for Climate Resilience (SPCR) and implement this program in Phase 2, with a budget of US$ 750,000 starting in 2013. Full implementation is planned for 2014-2018 with an anticipated budget of US$ 15 million. To implement the SPCR under the PPCR (Phase 2), the *Climate Resilience Sector Project* (Project Number: 46351-002) is being prepared and will be implemented for the period of with a grant equivalent to $19.25 million. Under Output 4: Ecosystem Resilience and Climate-Resilient Infrastructure Investments Developed, the project will (i) identify potential mangrove planting sites to provide shoreline protection, and (ii) develop best practice guidelines and support field demonstrations on the use of mangroves as natural infrastructure in areas identified for investment. The field demonstrations will raise community awareness, and include training on mangrove planning and provision of mangrove seedlings. Approximately 126 hectares of mangroves will be rehabilitated, partly in Fanga'uta lagoon. About $1.5 million is counted as co-financing for this MSP.

46. The GIZ Project is focused on land based activities and mainstreaming to develop be national strategies for adapting to climate change in agriculture, forestry, land use planning with courses mainstreamed into school curriculum. The total budget for the Pacific from Germany is approximately US$ 20 million with most activities conducted during 2009-2012. For this MSP, $1.5 million is counted as co-financing.

47. The over-riding gaps that this project seeks to fill reflect underlying conditions of governance and resource management to conservation of the lagoon habitats and sustainable use of the ecosystems and their services. This includes the lack of integrated management plan and strategic implementation process, ineffective or lack of collaboration among relevant government offices and community involvement, the lack of management scheme to regulate and/or monitor unsustainable practices, and the lack of public awareness and communication materials on integrated lagoon conservation and management.

1.8 LINKAGES WITH OTHER GEF AND NON-GEF INTERVENTIONS

48. This project builds on the Pacific Island Ridge-to-Reef approach and the conceptual framework outlined in the Program Framework Document (PFD) of the programmatic approach entitled "*R2R Pacific*

Islands Ridge-to-Reef National Priorities – Integrated Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods" under GEF support. The project development has also benefited from a number of completed and existing initiatives/processes related to biodiversity conservation and adaptive management.

49. The main baseline activities by the Government of Tonga are through the Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications (MEECCDMMIC) acting with the National Environment and Climate Change Committee (NECCC). The other key ministries and departments are Agriculture, Food, Forests and Fisheries, Finance and National Planning, and Tourism. The development of the *National Biodiversity Strategic and Action Plan and the Joint National Action Plan on Climate Change Adaptation and Disaster Risks Management* complies with Tonga's National Strategic Development Framework 2009–2014, the Draft Regional Framework for Nature Conservation and Protected Areas in the Pacific Islands Region 2014 – 2020, the United National Convention on Biological Diversity, the Pacific Islands Framework of Action on Climate Change 2006–2015, the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005–2015, the International Decade for Natural Disaster Reduction (IDNDR), the Yokohama Plan for Action and the Hyogo Framework for Action 2005–2015, and the United Nations Framework Convention on Climate Change. Their current budget is approximately US$ 1.6 million from a total government budget of US$ 113.6 million per annum with US$ 0.65 million allocated for environmental and cultural matters. MLCCNR are also the coordinating agencies for other GEF projects as well as those funded by the EU, AusAID, Japan and others. This linkage will ensure that the proposed project is coordinated with similar projects in Tonga.

50. The Government of Tonga is committed to the implementation of the CBD, including PoWPA, and has statutory laws that have provisions for biodiversity conservation. Tonga's vision for biological diversity and natural resources are to protect, conserve and enrich; and to be enjoyed by present and future generations. This will be achieved by fulfilling national targets for Target 11 in thematic areas of forest and marine ecosystems, species conservation, and agro-biodiversity, and strengthening local communities and civil society engagement, financial resources and mechanisms, economic valuation and building climate resilience through protected area integration and mainstreaming. The Kingdom has submitted to the Secretariat of the Convention on Biological Diversity in 2011 the *Action Plan for Implementing PoWPA 2013-2020* which covers 14.5% of Tonga's protected terrestrial surface and 2.5% territorial waters (as of 2010) including the Fanga'uta and Fangakakau Lagoon Marine Reserve. Tonga's implementation of PoWPA are guided the NBSAP and the outcomes of the Initial PoWPA Analysis. Priority actions outlined in the implementation plan are as follows: assessing gaps in the protected area network; establishing transboundary protected areas and regional networks; assessing the values of protected areas; sustainable financing and mechanism; assessing management effectiveness for both government and communities; establishing an effective PA monitoring system; and developing a research program for protected areas.

51. The *Japanese Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM)* has been providing technical and financial support to Tonga to enhance human and institutional capacity base for sustainable Solid Waste Management in Tonga's Vava'u island group. Expected outputs of the project are the improvement of the existing solid waste disposal facility (landfills) and operation and solid waste collection service, as well as the establishment of a framework and system for long term solid waste management in Vava'u. The agencies in charge of project implementation are the Ministry of Health and the Department of Environment and Climate Change with local stakeholder involvement. The project period is 2011-2015 (5 years).

52. The Australian development support for Tonga is approximately $32.1 million in 2012-13 with activities to improve governance, health and education. AusAID funding for the environment has particularly focused on adaptation for climate change through assistance to develop climate change strategies and to fund the establishment and ongoing support for the Joint National Action Plan Task Force Secretariat. AusAID added to the PACC project through International Climate Change Adaptation Initiative (ICCAI) specifically to implement climate change adaptation for the Water Resources and Coastal Zone Management sector with a

budget of approximately US$ 1.7 million for 2010-2013. Also AusAID is funding components of the GEF/UNDP Pacific Integrated Water Resource Management project in 2013-2014 for approximately US$ 1 million. Another AusAID project on the Pacific Risk Resilience Program is being implemented by UNDP during 2012-2016 for approximately US$ 4 million. The major activities are to strengthen mechanisms for climate change adaptation and disaster risk reduction throughout Tonga.

53. The Government of New Zealand supports a project on *Tongatapu Market Gardens* aiming to increase food security to 300 households (approximately 1,200 people) in three villages located on the Nuku'alofa Branch of the Fanga'uta Lagoon (Pea, Sopu, and Popua). The project will tailor land, crop and livestock management to the specific needs of their locations namely coastal erosion. The households will use self-sufficiency and permaculture methods to provide themselves with much needed fresh fruit and vegetables and livestock produce all year round. As planned, the project will contribute to replenishing fish stocks by repairing damaged coastlines through mangrove regeneration. The project covers the period of 2 years (2013-2015) with the budget of NZD 301,037.

54. The *Tonga Global Climate Change Alliance Project* is trialing coastal protection measures in Eastern Tongatapu around the capital Nuku'alofa where sea level rise has resulted on coastal erosion. The project is attempting to correct piecemeal and inadequately engineered attempts to protect the land. This is a priority area under the Joint National Action Plan for Climate Change Adaptation and Disaster Risk Management for 2010. UK Consultants have assessed the feasibility of various options and the project will provide protection for villages on eastern Tongatapu and develop best practice examples for engineered coastal protection systems elsewhere in Tonga. The budget from EU is approximately US$ 0.8 million for 2011-2014.

55. The *Tonga Pacific Adaptation to Climate Change (PACC) Project* is part of a Pacific regional project with 13 countries, which aims to improve the response effectiveness to climate change and disaster risks to water resource management, coastal management and infrastructure as well as food production and food security. Tonga is focusing on adaptation in the water resources sector to improve water management in six communities in western Tongatapu. Budget allocated to the project is US$ 0.75 million from GEF/UNDP/SPREP for 2008-2012.

56. The proposed project will also build on the *GEF/UNEP Integrated Island Biodiversity Project* being executed by SPREP to assess species composition and ensure the sustainable use of biodiversity throughout Tonga during 2012-2015 with a budget of US$ 350,000.

57. Although these initiatives are extensive, they are insufficient to adequately conserve terrestrial and marine biodiversity and manage land resources across the length and breadth of the Fanga'uta Lagoon and its catchment areas. The current major gaps which this project will address are: i) inadequate rehabilitation of damaged lagoon ecosystems that is critical for biodiversity conservation, soil and water management and ensuring sustainable livelihoods in the face of demand growth and climate change; ii) minimal initiatives for developing and strengthening protected areas, especially those in the water bodies; iii) poor recognition within governments and communities of the need for active measures to conserve ecosystems through integrated approaches; and iv) an inadequate capacity within the government and civil society sectors for ecosystem conservation tasks and inefficient use of the current capacity due to inadequate communication and cooperation within different sectors, especially within those of government working in terrestrial and marine ecosystems.

58. Therefore the focus of this proposed project is through implementing a ridge-to-reef approach that instills holistic and integrated management into government and community groups such that conservation is recognized as an integral component of their activities. The essential manifestation will be an integrated national system of terrestrial, coastal and marine managed areas that will follow active rehabilitation of damaged habitats and areas as well as recognition of the need for sustainable ecosystem services management.

PART II: INTERVENTION STRATEGY

2.1 PROJECT RATIONAL AND POLICY CONFORMITY: FIT TO GEF-5 FOCAL AREA STRATEGIES

59. The project is consistent with the GEF 5 Focal Area Strategies, in particular the Biodiversity Strategy and two of its objectives, the Land Degradation Strategy and two of its objectives, and the International Waters Strategy and one of its objectives, which are:

- BD Objective 1: Improve Sustainability of Protected Area Systems;
- BD Objective 2: Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes, Seascapes and Sectors;
- LD Objective 1: Maintain or Improve Flows of Agro-Ecosystem Services to Sustain Livelihoods of Local Communities;
- LD Objective 3: Reduce Pressures on Natural Resources from Competing Land Uses in the Wider Landscape; and,
- IW Objective 3: Support Foundational Capacity Building, Portfolio Learning, and Targeted Research Needs for Ecosystem-based, Joint Management of Transboundary Water Systems

60. The project focuses on Tonga's national priorities as described in the Tonga's National Biodiversity Strategy & Action Plan (2006) to promote the conservation and sustainable utilization of the country's biodiversity. The project shall implement an integrated approach with regards to land-water-coastal management to enhance ecosystem services and improve sustainability of the Fanga'uta Lagoon Marine Reserve, and to promote the positive impacts and mitigate the negative impacts of land-use systems and agricultural practices on biological diversity in agro-ecosystems and their interface with other ecosystems. It will use the 'adaptive management' approach to explore and develop an integrated management system to interact with the biophysical specificities of the lagoon in order to maintain the biodiversity and cultural values of agro-ecosystems and other ecosystems. Ultimately, the integrated environmental management and adaptive management approaches will help the people and communities living in and around the Fanga'uta Lagoon to establish strengthened socio-political (governance) and economic processes (alternative livelihood opportunities) that help them effectively address the challenges of biodiversity loss and habitat degradation, as well as reduce climate-related uncertainty over time via an integrated planning and monitoring system.

61. The project fully fits with the Objective 1 of GEF-5 Biodiversity Focal Area: Improve Sustainability of Protected Area Systems and the BD Objective 2: Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes, Seascapes and Sectors. The project address these BD Strategic Objectives of GEF-5 by improving management effectiveness of the Fanga'uta Lagoon Marine Reserve through policy/institutional development and management integration support for effective updating and implementation of the existing Environmental Management Plan for Fanga'uta Lagoon System (Outcome 2.2: Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks); improving conditions of critical lagoon habitats, productivity, water quality and fish production (Outcome 1.1: Improved management effectiveness of existing and new protected areas); and support for an application of spatial land-use planning in the lagoon catchment that incorporates biodiversity and ecosystem service valuation (Outcome 2.1: Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation).

62. This project contributes to the Land Degradation Objective 1: Maintain or Improve Flows of Agro-Ecosystem Services to Sustain Livelihoods of Local Communities and LD Objective 3: Reduce Pressures on Natural Resources from Competing Land Uses in the Wider Landscape. The project shall develop an enabling environment that will place Sustainable Land Management (SLM) in the mainstream of development policy and practices in the context of integrated environmental management in Tonga's priority lagoon catchment areas (Outcome 3.2: Integrated landscape management practices adopted by local communities), increase forest and tree cover in production landscapes (Outcome 3.1: Enhanced cross-sector

enabling environment for integrated landscape management), and implementation of landscape approaches for assuring an improved flow of agro-ecosystem services (Outcome 1.3: Sustained flow of services in agro-ecosystems).

63. This project is also consistent with the GEF-5 International Waters Focal Area Objective 3: Support Foundational Capacity Building, Portfolio Learning, and Targeted Research Needs for Ecosystem-based, Joint Management of Transboundary Water Systems. As part of the Pacific R2R integrated management approach, complemented by a regional multi-focal project (consisting mostly of IW funding), the project addresses this IW objective through integrated and participatory approaches to enforce regulations on water quality of the Fanga'uta lagoon and catchment and to support of fisheries in the face of multiple stresses. The holistic approach applied by the project shall contribute significantly to foster approaches to IWRM and ICM for strengthening the likely achievement of the integrated Fanga'uta Environmental Management Plan developed for the environmental and economic health of Tonga's priority catchment (Outcome 3.2: On-the-ground modest actions implemented in water quality, quantity (including basins draining areas of melting ice), fisheries, and coastal habitat demonstrations for "blue forests" to protect carbon).

2.2 PROJECT GOAL, OBJECTIVE, OUTCOMES AND OUTPUTS/ACTIVITIES

64. The **project immediate objective** is to conserve the ecosystem services of the Fanga'uta Lagoon through an integrated land, water and coastal management approach thereby protecting livelihoods and food production and enhancing climate resilience.

65. To achieve this objective, the project shall make interventions at two interconnected levels: national (Outcome 1.1, 1.2, and 3.1) and site level (Outcome 1.1, 1.2, 2.1, and 3.1). Based on a barrier analysis (see Part I), the project will address the critical gaps in environmental and ecosystem services conservation in the Fanga'uta Lagoon catchment through the establishment of an effective governance system and sustainable management of the lagoon ecosystems (Component 1); implement integrated environmental management approaches for improving conditions of critical habitats, productivity, water quality and fisheries in the lagoon catchment (Component 2); and strengthen knowledge and awareness of the Fanga'uta Lagoon ecosystem functions and associated socio-economic benefits within the national stakeholders and local communities (Component 3). Project interventions, which is structured according to these three main component areas, have been designed and developed through a participatory process facilitated by the R2R PFD stage and subsequent consultations with the Tongan Government and other stakeholders. Project outcomes and outputs are as follows:

COMPONENT 1: APPROPRIATE GOVERNANCE OF FANGA'UTA LAGOON CATCHMENT AREAS AND INTEGRATED MANAGEMENT OF LAGOON ECOSYSTEMS

66. Under this component, an enabling environment for governance of Fanga'uta Lagoon Catchment Areas will be created and integrated management approaches will be delivered. The focus will be on ensuring that effective governance of ecosystem structure and functions in the Fanga'uta Lagoon is in place and sustained. The aim of integrated management is to improve decision making to ensure that decisions: a) are more effective in the long term; b) are not conflicting; c) are built upon a common knowledge base; and d) take into consideration the needs of the lagoon ecosystem as well as the needs of humankind. By implementing an integrated-management approach, the Fanga'uta Lagoon Catchment Management Committee will be established and will ensure that it: a) maintains the health of our marine ecosystems; b) addresses user conflicts; c) limits the cumulative effects of human activities within a defined ocean space; and d) maximizes and diversifies sustainable use of the lagoon and catchment ecosystems. This is a challenge that requires innovative and adaptive institutional approaches, which the project will devise, develop and demonstrate in the FLC.

Outcome 1.1 Multi-stakeholder management system established to guide the updating of the EMP FLS and implementation of the FLC Integrated Environmental Management Plan (IEMP)

(Total cost: US$650,000; GEF: US$ 150,000; Co-financing: US$500,000)

67. To set the stage within which integrated management occurs, as an enabling condition, a governance process of interactions and decision-making among the actors involved in the management of the Fanga'uta Lagoon must be created and sustained to address key environmental issues and problems. The outcome will provide "institutional arrangements" within which the interaction between the governing bodies (i.e., the Fanga'uta Lagoon Catchment Management Committee and the 'Council') and other stakeholders including local communities and private sector helps identify key issues and acceptable/appropriate solutions.

Output 1.1.1 Capacity of NECC and FLC Stakeholders enhanced to more effectively implement an integrated lagoon ecosystem management approaches

a) Creation of a multi-stakeholder Fanga'uta Lagoon and Catchment Management Committee, through the National Environment Coordinating Committee (NECC), co-opting additional members representing local communities, private sector, NGOs/CSOs to guide updating and implementation of the FLC IEMP

Once the Project Management Unit (PMU) is mobilized, its first task is to work with the national implementing partner to identify the representatives from the various identified members of the FLC Management Committee, as listed below. The first meeting of the Committee will be held back-to-back with the project inception workshop to approve the first annual work plan and budget. It will also finalize the proposed TOR in Section IV, Part III. As indicated in the output, the Committee will serve also as the Project Steering Committee that will guide the updating and implementation of the FLC IEMP.

The FLC Management Committee will comprise the following members:

1) Government through the NECC: ten (10) seats
   a) Chair: Minister of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications
   b) CEO for Lands, Environment, Climate Change and Natural Resources
   c) Director of Health
   d) Director of Education and Training
   e) Director of Infrastructure
   f) CEO for Agriculture, Food, Forestry and Fisheries
   g) Secretary for Commerce, Tourism and Labour
   h) Secretary for Finance and National Planning
   i) Secretary for Foreign Affairs
   j) Solicitor General
2) Communities: five (5) seats
3) NGOs/CSOs (e.g., National Fisheries Council; one other NGO): two (2) seats
4) Private Sector: Tonga Chamber of Commerce: one (1) seat

The Committee will formulate and agree on its Terms of Reference during its first meeting with inputs from the Project Management Unit.

b) *Conversion of the FLC Management Committee into a 'Tongan Interagency Council on FLC' assessed by year 3 and if appropriate, implemented before the end of the project*

Established in a form of voluntary recruitment, a well-structured FLC Management Committee with a clear-cut purpose and composed of knowledgeable members who are fully aware of their

responsibilities will still be ineffective if there is a reason for lack of committee effectiveness. In a longer term, constraints may be imposed by a number of factors such as lack of the support it needs to be successful (e.g., budget, discretion to act on its own within boundaries, release from other duties), conflicts of interest, personality, or pressure of external priorities. These situations should be resolved as soon as possible to enable the committee to concentrate on its prime objective—the health of FLC ecosystems.

To ensure the sustainability of effective governance in FLC, taking into consideration possible risks of work duplication and resource fragmentation, this output will focus on converting the FLC Management Committee into an interagency council serving as a subsidiary body of the Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications (MEECCDMMIC) or the Prime Minister's Office (PMO) as appropriate. A 'Tongan Interagency Council on FLC' should be established with dedicated technical staff and sufficient budget. As the FLC cooperation body with its membership comprising a balanced representation of both governmental and non-governmental stakeholders and with the benefit derived from the legitimacy and convening power of the primary authority, it could play a crucial role in fostering dialogue and cooperation between concerned authorities and stakeholders to implement the FLC IEMP and conserve the ecosystem services of FLC. According to the proponents of conversion, it would provide the Committee with greater authority, consolidate its achievements, and further advance its work towards effective management of FLC.

c) *Trainings on IEM conducted to capacitate the members of the FLC Management Committee*

Once the FLC Management Committee is appointed, it is crucial to ensure that the committee members are motivated and putting forth effort for the committee to be successful. As an incentive for involvement, this output will provide a series of training to attract and retain the committee members. The focus of this output will be to ensure that the committee members are fully briefed on the IEM concept and approach, and that technical information is easy to understand. The key is to improve senior management awareness of IEM and also to gain their acceptance. In addition, to ensure that each committee member understands what is required of him or her, as part of this training output, the list of duties and the statement of authority will be provided and discussed, either individually or in committee, and each member's understanding ensured and/or confirmed.

Output 1.1.2 Measures delivered to fully engage the Fanga'uta Lagoon Catchment (FLC) communities in lagoon ecosystem management

a) Participation of communities in EMP updating and implementation enhanced through their direct engagement

Public endorsement of the integrated environmental management concept, objectives, and strategies by key national and local communities are crucial to the success of the plan implementation. Community engagement delivers a direct benefit to the FLC ecosystem conservation in its policy and planning activities, enabling the authorities to design programs more closely tailored to the needs of both individuals and communities. Their cooperation and involvement is an essential component in helping the government successfully conserve the ecosystem structure and services of the FLC.

This output focuses on direct engagement of the FLC communities in updating the existing Environmental Management Plan for Fanga'uta Lagoon System (2006) and the execution of an updated Integrated Environmental Management Plan for Fanga'uta Lagoon Catchment through FLC Management Committee functions and decision mechanisms. To keep pace and provide workable solutions to the issue facing the FLC, such as sustainable communities, ecosystem conservation and climate change, the committee will host community specific workshops in each of the FLC's key communities (see Annex B), as well as to reengage the communities in a series of workshops and policy dialogues to discuss land use and conservation of ecosystem services in the FLC.

b) Communities empowered through capacity building on integrated natural resources management

Upstream support for sustainable management of FLC ecosystems should be provided to help ensure stable access to healthy environment and economic development in all FLC communities. More than the involvement, participation or engagement, a process by which the FLC communities increase their attributes and build capacities to gain access, partners, and/or networks for control over the factors and decisions that shape their lives should be facilitated. This output will contribute to enabling a sustainable and positive change in the FLC communities through innovative collaborations and participatory approaches in learning and communication that encourage discussion and debate result in increased knowledge and awareness, a higher level of critical thinking, and building partnerships with other stakeholders/sectors in finding appropriate solutions.

Key output activities will include: i) identification of strategies for community action, approach, and functions of key community groups in working towards the objectives of the FLC IEMP through a series of consultation with lagoon communities; ii) development and implementation of mini-projects (i.e., mangrove replanting and sustainable use, tree nurseries, village fisheries management, waste disposal and recycling, village composting toilets, organic farming practices in schools, and responsible business engagement and collective action in community-based eco-tourism), with economically and ecologically achievable benefits within 12 to 18 months of start date, that are carried out by community groups; and iii) establishment of a FLC community-based research and knowledge management center to generate lagoon community action and positive social change through the use of multiple knowledge sources and networks (i.e., linking local communities with school teachers and university faculties interested in working collaboratively to address the communities' research needs and to develop awareness programs), as well as through meaningful participation by all partners in planning and conducting research to addressing lagoon environmental management issues (including land use planning and adaptive management of the FLC).

Outcome 1.2 Participatory updating of the Fanga'uta Lagoon Catchment IEMP completed, adopted, endorsed and budgeted for

(Total cost: US$500,000; GEF: US$ 225,000; Co-financing: US$ 275,000)

68. This outcome will strategically position the FLC for the future by maximizing ecosystem services efficiency and management effectiveness, as well as conserving the ecological and economic health, of the FLC through integrated environmental planning and management approaches. A review and update of the existing Environmental Management Plan for Fanga'uta Lagoon System (EMP FLS) is necessary so that the FLC Management Committee can make informed decision about environmental investments, and is prepared to meet future demand for ecosystem services in FLC. To promote flexible decision making that can be adjusted in the face of uncertainties resulting from management actions and other events such as climate variability and change, this outcome focuses specifically on an adaptive, learning-based process to reduce management uncertainty and improved management effectiveness as a result of learning and careful monitoring of the impacts of management. This adaptive management approach will help meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders in FLC.

69. The updating process will be initiated in Year 1, whereby sustainability issues across the FLC are identified and assessed, and the document updated and revised as necessary to address new developments on the basis of adaptive change and priority. The EMP FLS Update (or FLC IEMP) is anticipated to conclude by Year 2 and will include a process of robust community and stakeholder engagement coupled with a subsequent public comment period provided the Management Committee with the feedback necessary to strengthen and refine the proposed set of emerging FLC sustainability issues and associated solutions. The FLC IEMP is to be adopted by the Management committee and endorsed by the National Environment Coordinating Committee in Year 3, with available funds for implementation.

Output 1.2.1 FLC IEMP prepared and completed; establishing technical, biophysical, oceanographic, socioeconomic and demographic baselines; updating the EMP completed in 2001 with additional parameters to be established.

a) FLC IEMP Baseline Review

The purpose of this output is to systematically identify challenges and solutions to establish and implement FLC IEMP through the provision of information on the current situation of the FLC management authority with respect to technical, biophysical, oceanographic, socioeconomic and demographic issues. With information available from records of concerned agencies, including the outcomes of scientific studies and community consultations generated during the preparation of the existing EMP FLS (from 1998 when the drafting process was commenced to 2001 when the Cabinet approved the Plan), the situational review produces a solid base from which to start the EMP FLS Update preparation process and is an opportunity for the FLC Management Committee to recognize the priority issues to manage within the FLC IEMP. If the data needs cannot be met by secondary data, there may be a need to conduct other forms of data-gathering such as focused group discussions and rapid appraisals.

Key steps involved in undertaking the FLC IEMP baseline review are identified as follows:

- Management and Stakeholder Commitment – To undertake a successful review of problem situations affecting the FLC communities and stakeholders, the most critical element of the review process is to gain commitment from the FLC Management Committee and relevant stakeholders. A strategy is to involve senior management and key influencers in providing advice on policy, technical and other matters when the review is being conducted. This may include an invitation extended to members of the FLC Management Committee and representatives of key stakeholders to lagoon and catchment areas/communities needing special and urgent attention. These types of activities provide a chance for FLC Management Committee and key stakeholders to gain an understanding of the importance of getting the FLC IEMP right as well as the practicalities involved in managing and conserving the FLC ecosystem services.
- Planning and Methodological Review – The FLC Management Committee will be responsible for planning the review (i.e., setting up working groups, timeframe, resources); for assessing what methods will be used in undertaking the review; for ensuring that the review links into existing EMP FLS and other environmental initiatives relating to FLC and its ecosystem services and functions; and for making sure that the review plan is turned into action through awareness raising activities. This exercise will put the importance of the baseline review into the context of the wider FLC IEMP.
- Review of Existing Management Arrangements – During the review process, consideration will be given to the existing management structures and systems. As a guide for action by the Government, and by individuals taking responsibility for their own environment, implementation of the FLC IEMP depends on the cooperation of all parties involved. The FLC Management Committee will provide the strategic management necessary for the review process, including the identification of the best way in which to integrate the FLC IEMP into the existing management structures in order to ensure its sustainability.
- Detailed Review – The analysis of the EMP FLS will be gap analysis, i.e., comparing the actual situation in implementation with that suggested in the Plan including actions designed to be implemented in the short, medium and long term. The detailed baseline review will answer key questions to help identify the problems, extent of the problems, the target areas and population, as well as the immediate and underlying causes of the problem:
    - Where are the biodiversity conservation lands and who manages them? How much of a species' habitat is on protected lands? Which areas deliver which ecosystem services?

- What are the current and changing conditions of demographic, economic, social, political, and cultural factors that are affecting the sustainability of ecosystem structures and services in FLC?
- How do the conditions affect the availability of natural resources, provision of ecosystem services, access to and use of these services, and the corresponding outcomes?
- What resources are needed to bridge the gaps and improve the outcomes? What resources are being provided? Are the allocated resources enough?

The findings will be validated through various means; e.g., focused group discussions and consultations with the representatives of the FLC stakeholders. The identified problems will be prioritized based on given criteria.

- Report – The FLC Management Committee will ensure that the full report is produced and endorsed, showing the findings of the baseline review, identifying problems and possible solutions to establish and implement the FLC IEMP as well as highlighting areas of strengths and weakness with the environmental management performance of the concerned authorities.

  The report will also describe the key socio-economic and environmental parameters that may be affected by resolution of the FLC management issues addressed by the IEMP.

  - Socio-economic Parameters: direct and indirect income associated with local industries and economic activities that depend on FLC ecosystem services (e.g., forestry, agriculture, fisheries, eco-tourism, power generation, urban settlement); direct and indirect employment (e.g., in collecting mangrove products, fisheries and related activities, lagoon lodging); resource revenues generated per unit of activity (current and projected future activity); social and civic vitality (e.g., local governance, population impacts, social wellbeing in terms of number of jobs, income levels, and distribution of job opportunities held by local residents); non-commercial values for traditional, cultural, and subsistence purposes (e.g., recreation, food, domestic water)
  - Environmental Parameters: lagoon ecological integrity (water quality, landscape changes and land use planning, ecological representation such as old forests within landscapes, riparian and fish habitats); implications related to climate change (e.g., protected areas, resource management initiatives); technological developments (e.g., waste management and recycling, drainage design, vegetation to minimize sedimentation and run-off, sustainable fishing methods);

b) IEMP Target Setting – Identification of Priorities and Actions

The existing EMP FLS identifies a number of concerns over the future of FLC system: decline in the populations of large fishes (which has resulted in catching smaller and fewer fish), solid waste disposal issues (rubbish and litter), loss of mangroves, properties threatened by erosion, loss of seagrass, sedimentation and muddy water, water pollution, and loss of species and habitats. The EMP FLS defines the lagoon areas into eight (8) usage zones, each with its own set of resources, stresses and human needs (see Section I Part I).

Building on the guidelines and actions designed in the EMP FLS, taking into consideration the findings of the baseline review and additional parameters identified in the review report, the scope and contents of the existing EMP FLS will be updated and expanded through an application of integrated management system to the FLC areas by the choice of appropriate indicators and targets. Expansion will also include key stakeholders in the urban areas and cooperation with various lagoon catchment communities. In addition, the expansion will integrate other dimensions of sustainability into the environmental management system and will develop into an integrated management system focusing on environmental, social and economic dimensions.

This integration will use the EMP FLS and relevant government policies responding to FLC environmental issues, as well as the baseline review results, as reference documents to identify direct and indirect sustainability aspects of the FLC areas. The framework of the EMP FLS Update will be rearranged into a document containing: critical points, preliminary targets and their economic feasibility, their level of sustainability, the local authority's budget, existing actions, relevant national and higher institutional development programs, availability and management of resources in FLC, and monitoring systems.

Output 1.2.2 FLC IEMP adopted, mainstreamed, and funded

70. The EMP FLS will be updated to be the FLC IEMP, based on comprehensive baseline review. The new FLC IEMP will be prepared for the stakeholder review, and for endorsement and materialization.

a) Fanga'uta Lagoon Catchment IEMP adopted by the Management Committee and endorsed by the National Environment Coordinating Committee

A series of stakeholder consultation meeting will be organized to receive their feedback on the new FLC IEMP and to seek their cooperation in its implementation. The EMP FLS zoning plan will become an integrated environmental management plan aiming to achieve optimal outcomes for biodiversity conservation, rehabilitation of lagoon habitats, and enhancing the resilience of lagoon ecosystem services for improved socio-economic conditions of the FLC communities.

The FLC IEMP will be adopted by the FLC Management Committee and endorsed by the National Environment Coordinating Committee.

b) Multiple-uses of the lagoon are recognized and balanced in the FLC IEMP

The FLC IEMP will outline clearly the concept of ecosystems (which often have multiple and heterogeneous groups of beneficiaries differing in terms of spatial location and socio-economic characteristics) and ecosystem services based on landscape diversity in FLC, and make recommendations regarding the management and conservation of the FLC ecosystem services by setting strategic functional priorities and fostering multiple uses (e.g., mangroves for 1st coastal protection, 2nd biodiversity, and 3rd food - fishery and polyculture) to assure a balance in ecosystem services. The FLC IEMP will use appropriate functional and valuation approaches in which multiple value estimates (e.g., based on the understanding that water is shared and passed on along the 'water chain' and depleted, polluted, retained or diverted by various uses) for ecosystem services and biodiversity in the lagoon and catchment areas.

c) Responsibilities in FLC IEMP implementation clearly delineated across government agencies, private sector, communities and other stakeholders

The FLC IEMP will also clarify the respective roles that different stakeholders (including the FLC Management Committee; national governments such as the MEECCDMMIC, the MAFFF, the MCT, the MIA, the MFNP; all concerned local government units (districts, towns, and villages) in FLC areas; FLC communities; interested academia and researchers; NGOs; international organizations; and other stakeholders such as media and educators) can play in promoting multiple-uses of the lagoon resources and improve the ecosystem services.

d) FLC IEMP is mainstreamed into development plans at the community, provincial and national levels and budgets allocated by relevant branches of government by year 3 for implementation and monitoring

Under this output, FLC IEMP mainstreaming is targeted at government processes for planning, budgeting, sector implementation, and local level implementation.

- Opportunities for effective awareness-raising and partnership building aimed at development policy makers and the wider public will be identified and activities carried out by the Project

Management Office (PMO) under the guidance of the FLC Management Committee. The FLC IEMP will be disseminated and media programs developed targeting at various stakeholders for building national and local consensus and commitment.

- Key development sectors whose programs are important in addressing sustainable ecosystem services and IEM concerns in FLC will be engaged, and the FLC IEMP mainstreaming effort is aligned to the current government process such as preparation and execution of a public expenditure review, JNAP-CCADRM, or MDG strategies.
- Appropriate environment, ecosystem service (provisioning, regulating, cultural and supporting), and sector indicators that reflect the targets for measures to improve integrated management system in FLC will be designed, developed, and integrated with existing monitoring systems through closely collaboration with the statistics office and other relevant entities in FLC villages. National and local capacity on data collection and management will be strengthened.
- The MFNP and relevant agencies will be engaged to ensure the priority environmental management measures, with potential to deliver integrated land, water and coastal management, described in the FLC IEMP are funded. Training will be provided to strengthen capacity of environment, planning/finance and sectoral agencies to track and forecast the contribution of sustainable FLC ecosystem service multi-uses to public finances and how this can be improved. The PMO will engage with in-country donors at the early stage of the EMP FLS updating process through consultative meetings and other donor coordination mechanisms to build and embed support for FLC IEMP mainstreaming in donor groups working on different sectors.

Output 1.2.3 Multi-stakeholder participatory mechanisms conducted to ensure adaptive management during the preparation, implementation, monitoring and evaluation of FLC IEMP

71. This output involves an adoption of the adaptive management approach to promote flexible decision making in the development and implementation of FLC IEMP that can be adjusted in the face of uncertainties resulting from management actions and other events such as climate variability and change, foreseeing the periodical updating and improvement of the IEMP objectives, strategies and interventions in FLC.

a) Impacts of climate change on the lagoon are addressed in the formulation of the FLC IEMP

With an emphasis on reducing uncertainty about climate change impacts to improve management and conservation of ecosystem services in the FLC, within the context of the FLC IEMP development process, community issues and priorities as well as adaptation options to address climate change impacts on the provision and sustainability of lagoon ecosystem services will be identified and incorporated. Concerned government ministries, statutory authorities in Tongatapu, NGOs and private sector will be engaged in consultations aiming to identify related issues and priorities to address climate change in the FLC IEMP. Vulnerable and potentially vulnerable communities in the FLC will be informed about the FLC IEMP development through the consultation to collate information on impacts and priorities as well as assessing the extent of mainstreaming climate change adaptation at sectoral level.

b) Regular monitoring conducted of the status of the Fanga'uta lagoon and results communicated to all stakeholders

A monitoring plan will be designed and implemented from the outset to regularly track system status and other key attributes needed for adaptive decision making with data that are relevant to the FLC management issues. This may include ecological (such as fisheries, mangroves), physico-chemical (such as erosion, water pollution), and human interest related (such as health, loss of agricultural lands, landscape, navigation, employment opportunities) parameters which are estimated with properly designed monitoring methods and used to adaptively manage a habitat or an ecosystem

service in the FLC. Monitoring information will factor directly into the learning process in adaptive management, contributing to increase understanding of system dynamics in order to identify appropriate management actions under the FLC IEMP.

To track system behavior and the responses to management through time, the monitoring plan will also ensure that concerned agencies, particularly the Department of Climate Change, make a commitment to schedule and allocate resources for timely monitoring and assessment over the life of the project, as well as over extend time scales beyond the project life.

c) Results are fed back to enable adaptive management of the lagoon

The FLC system monitoring will be established as an ongoing activity to assess and meet the requirement of successful ecosystem service management in FLC, producing data after each adaptive management intervention to evaluate the intervention, update the intervention measures, and prioritize management options in the next time period. Key monitoring indicators and locations will be identified and community-based monitoring programs will be developed in the FLC areas. The areas' system service changes will be monitored throughout the project implementation and annual monitoring reports and recommendation will be submitted to the FLC Management Committee for necessary adjustment of the FLC IEMP.

COMPONENT 2: IMPLEMENTATION OF THE INTEGRATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE FANGA'UTA LAGOON CATCHMENT

72. This component will assist in the improvement of the IFC IEMP to reduce pressure to the lagoon's ecosystems and their services, while enhancing the livelihoods of local communities. The activities include: rehabilitation of major coastal habitats; sustainable management of lagoon fisheries; promotion of ecotourism; sustainable forest and landscape restoration; and landscaping for protection of water quality. The project team will work with the FLC Management Committee and local stakeholders within the FLC areas to select and design the intervention sites taking into consideration the existing land use or zoning maps described in the IFC IEMP. Trainings for key stakeholders (particularly women and youth) in districts/villages and technical support will be provided to raise capacity of the local communities for the changes.

Outcome 2.1 Improved conditions of critical lagoon habitats, productivity, water quality and fish production through the implementation of priority interventions identified in the IEMP

(Total cost: US$6,620,000; GEF: US$ 1,245,000; Co-financing: US$5,375,000)

73. The focus of this outcome will be on ensuring successful rehabilitation of degraded critical lagoon habitats and restoration of ecosystem productivity, while improving water quality, fish production, as well as conservation of marine reserve areas in the Fanga'uta Lagoon. Key intervention to be delivered include prioritizing the improvement of FL's ecosystem and human health, strengthening enabling framework conditions including institutional and social capacity, and efficient collaboration and coordination across sectors and communities.

Output 2.1.1 Areas of approximately 80 ha of the lagoon's major coastal habitats (mangroves stands) restored

74. Based on the existing EMP FLS, as described above, mangrove areas in the Fanga'uta Lagoon is the largest area in Tonga which functions as the sanctuary and breeding ground for lagoon organisms and species. The lagoon's mangrove areas and their ecosystem services have been destroyed and degraded by developments, mainly dredging and land reclamation. To improve the condition of mangrove ecosystems in the lagoon, based on the EMP FLS which prescribes both conservation and sustainable use targets with specific recommendation for area management, the project will address five major issue areas facing the

lagoon through integrated management approaches that balance multiple uses for the sustainability of the lagoon ecosystems and their services.

a) Mangroves stands improved covering 3 ha (Zone 3: Mangrove Conservation Area); about 50 ha (Zone 8: Special Public Use Area); about 30 ha (Zone 4: Sustainable Mangrove Use Area)

This output will implement appropriate measures to remedy the problems of mangrove degradation in specific areas of the Fanga'uta Lagoon. Mangroves in specific areas of the Fanga'uta Lagoon will be restored and conserved aiming for conservation of ecosystem services and sustainable uses. Through the project implementation, mangrove stands in Zone 3 (Mangrove Conservation Area), Zone 4 (Sustainable Mangrove Use Area) and Zone 8 (Special Public Use Area) will be restored and conserved covering a total area of about 80 hectares.

b) Technical and financial support provided to mangrove nursery established by MESCAL project

The restoration of FL's mangrove ecosystems will be implemented along working towards the achievement of sustainable mangrove plantation through mangrove nursery practices. A mangrove nursery will be established in Nukuhetulu under the MESCAL Project (January 2010 to June 2014 and its second phase) to augment seedling production. This output will undertake activities that necessary support for ensuring an adequate supply of the seedlings that can be used for mangrove planting in the extended period of rehabilitation, while promoting community participation in lagoon habitat management and conservation. Key activities include i) the production of a Manual on Mangrove Nursery Techniques which is a planting guide describing the technical problems and solutions noticed in local nursery management practices (e.g. inappropriate placement of a seed orchard, poor identification of viable parent trees, and inappropriate criteria for determining the readiness of seedlings for planting); ii) training of FL communities particularly fisher women and men living in the lagoon areas in nursery raising techniques, paving the way for sustainable mangrove forest management through a participatory management approach; and iii) engagement of the local communities particularly women and youth in raising mangrove saplings and maintaining the nursery in the backyard of the houses in targeted villages (to be identified during the Inception Phase) as livelihood alternative for women and youth.

Output 2.1.2 Working mechanisms set up to guarantee participatory fishing area and sustainable fisheries resources management by the FLC communities

75. Through surveys and interviews during the development of the EMP FLS, fishery communities in the lagoon areas noticed that the size and number of the fish being caught had started to reduce, indicating that fishing in the FL may not be sustainable. This output combines the integrated ecosystem approach with community-based fisheries management in the Fanga'uta Lagoon, aiming to involve the participation of FL community stakeholders for acknowledging uncertainty in the lagoon's fisheries and addressing fishery problems while ensuring sustainable fisheries, improved livelihoods, and healthy lagoon ecosystems.

a) Consistent with the FLC IEMP and taking into account its status as a marine reserve, areas for conservation and subsistence or semi-commercial fisheries are reviewed and/or delineated inside the lagoon

This output focuses on reducing human stress on fish through participatory area management. On the basis of FLC IEMP and marine reserve management principles, the project will involve FLC stakeholders in reviewing and delineating specific areas in the lagoon (mainly Zone 2: Subsistence Fisheries of the EMP FLS) for conservation and subsistence or semi-commercial fisheries. Within an ecosystem context, through a culturally appropriate process, the FLC communities will be mobilized to work with concerned government agencies and other stakeholders to define and identify the managed areas where fishery resources will be conserved, managed, and monitored. Joint area zoning decisions will be incorporated into the FLC IEMP planning process through the FLC Management

Committee. The project team will organize technical and consultative meetings/workshops to ensure the adaptive fisheries management process operates effectively.

b) Existing fisheries regulations reviewed and refined for implementation, including but not limited to closed seasons, closed areas and mesh size regulations

This activity is concerned with an integration of legal consideration into the management of fisheries in FL. Based on the new knowledge acquired during the fishing area delineation, the extent to which non-compliance with the existing fishing regulations and the extent to which new regulations need to be developed by concerned agencies, particularly the Fisheries Division (DOF) of the MAFFF, in consultation with fishers in the FL villages to regulate the exploitation of fishery resources in the lagoon will be considered. The existing regulations will be reviewed and the process of refining the regulation initiated as appropriate to reflect experiences and information collected through the FLC IEMP planning process. These include but not limited to the Fisheries Regulations 1994, Section 11, Section 20 and Schedule 6 under the Fisheries Act of 1989; Fisheries Management (Conservation) Regulations 2008; Fisheries Management Act of 2002; Fisheries (Coastal Communities) Regulations 2009; Fisheries (Limutanga'u) Regulations 2009; Fisheries (Vessel Monitoring System) 2009; Fisheries (Local Fishing) Regulations 2009; and Fisheries (Conservation and Management) Regulations 2008. Trainings will be provided to enforcement officers and village volunteers on effective operations to monitor and enforce fisheries regulations in the lagoon areas.

Output 2.1.3 Eco-tourism awareness to FLC community conducted and local initiatives demonstrated

76. This output will explore and promote the development of eco-tourism activities in the Fanga'uta Lagoon areas for the benefits of ecosystem health and community well-being. Building upon and learning from initiatives that may be already in place (e.g. the eco-tourism practices in 'Eua), the project team will collaborate with the newly established Tonga Tourism Authority and concerned officials in the MCTL, in consultation with FLC communities and local tour service providers, to prepare and implement an eco-tourism development strategy for the FLC. Collaboration with local entrepreneurs, tourism service providers, and local communities will be strengthened to encourage them to remain involved over the project life.

a) Public-private partnerships are forged to promote eco-tourism such as kayaking and nature walks through mangrove boardwalks, among others

This activity will build partnerships between the Government and the tourist businesses in the lagoon areas to launch an eco-tourism program for the Fanga'uta Lagoon areas, aiming at providing low impact tourism, protecting lagoon ecosystems, and empowering local communities. A detailed FLC eco-tourism development strategy will be prepared (which shall outline backgrounds, situation analysis, vision, mission, strategic objectives, priority actions, and implementation strategy) and a few pilot projects (such as kayaking, nature walks through mangrove boardwalks, village tours) undertaken as prototypes. Based on the experience with these pilot endeavors, the eco-tourism strategy and standards can be refined and applied for future expansion of eco-tourism in the lagoon areas and beyond, as well as feed into the FLC IEMP as appropriate. The strategy may explore possibility of future community development fund with a proportion of resources generated through the tourism user fee.

b) Communities (including women and youth) engaged and benefitting from eco-tourism activities

The project will take an initiative to combine efforts with local entrepreneurs and community associations to develop common marketing activities such as tours offering insights into traditional agricultural and fishing activities as well as demonstration of traditional craft making and description of traditional life styles and music and dance performances by villagers to promote eco-tourism, focusing on women and youth living in the FLC villages. Training workshops and awareness

campaigns for female villagers and youth to be effectively engaged in eco-tourism of the FLC will be implemented.

Output 2.1.4 Activities based on sustainable land and forest management demonstrated in the FL catchment areas[19]

77. This output will reduce the existing and potential environmental stress to the Fanga'uta Lagoon system caused by land-based activities in the lagoon watershed, particularly from open lands. Key interventions focus on minimizing the movements of nutrients, mud, sewage and chemicals into the lagoon via groundwater, drainage systems or run-offs from village settlements and agricultural areas in Zone 5: Village and Agricultural Uses of the EMP FLS.

a) Improved vegetation and forest belts are put in place in selected areas as a means to control coastal erosion and reduce sediment flow into the lagoon; fruit-bearing trees included in these belts

The forests and vegetation (including fruit-bearing trees) along the lagoon's shores and watershed areas of selected villages (total target is 50 hectares in the villages of Pea, Folaha, Vaini, and Mu'a) will be replanted with the involvement of local volunteers and village officers in order to reduce soil erosion, sediment flow, and run-off into lagoon waters. Annual campaigns to plant trees in the areas will be conducted to promote plantation and raise public awareness.

b) Trainings conducted on sustainable land management practices to minimize pollution loadings into the lagoon

Villagers and landowners living in the lagoon watershed will receive training to develop practical skills to successfully management and implement sustainable agricultural practices in their own lands (in coordination with the FAO R2R project on agriculture). The participants will be selected from key villages, local officers, and volunteers from FLC communities. The training will help raising environmental awareness of participants and will strengthen their commitment and involvement to the project implementation to minimize pollution loading into the lagoon.

Output 2.1.5 Capacity for Fanga'uta Lagoon water quality control strengthened and on-site activities demonstrated

78. This output will address water quality of the Fanga'uta Lagoon which is a priority issue identified through the EMP FLS analysis and community consultation, aiming to provide protection of the lagoon's water resources, coastal biodiversity, livelihood, and practically demonstrate the links between public health and the conservation of ecosystem services. Activities will include working with local government and community institutions as well as the private sector in the lagoon catchment areas to limit pollution from urban, suburban, rural, industrial, and agricultural lands through an application of appropriate wastewater treatment systems, monitoring and enforcement of environmental regulations, and land-use zoning practices.

a) Control of pollution from domestic sources

A control system of pollution from domestic sources in the FLC areas (mainly in Zone 5: Village and Agricultural Uses and Zone 7: Urban Use Area in the EMP FLS) will be set up through (i) improved septic tank design to minimize percolation into the groundwater and into the lagoon; (ii) demonstration of composting toilets in selected villages; and iii) improved solid waste disposal through regular collection and segregation. The project team will work with national institutions with mandate on sanitation and wastewater (MEECCDMMIC, MI, MoH, TWB), local offices and communities in districts and villages situated along the lagoon's shores to review, develop and

19 The project will work with the FAO R2R project that focuses on agroecosystems. Preliminary discussions have been initiated with MAFF on this regard.

implement the right treatment technology and options to minimize impacts of domestic sources (on-site demonstrations).

The project team will work with national and local stakeholders to select the demonstration sites (i.e. in Pea, Ha'ateiho, Nuku'alofa, Folaha, Nukuleka, Hoi, Mu'a, and Vaini) and design facilities in each site. On-site trainings and workshops will be provided to town/district officers as well as village leaders and volunteers on sanitation improvement and related technical knowledge.

b) Enforcement of regulations, including EIA, to control effluents and discharges from industrial and commercial sources, e.g., including monitoring discharges of cooling water from the power plant; moratorium on reclamation until completion of coastal zoning

This output will support the national and local authorities in their efforts to attain the objectives of environmental regulations concerning water quality in the FL by strengthening cooperation on, and coordination mechanisms for, compliance with, and enforcement of, the existing environmental laws and regulations (including but not limited to Environmental Impact Assessment Act, 2003; Environment Impact Assessment Regulations 2004; Public Health Act 1992; Waste Management Act 2005; Tonga Water Board Act 2000; Tonga Electric Power Board Act (Amended by Act 46 of 1988) ; Marine Pollution Prevention Act 2002). Particularly, this intervention will allow the FLC stakeholders and communities to improve their understanding of the issues and impacts of compliance and non-compliance with environmental regulations in targeted environmentally-regulated activities (e.g., effluents and discharges from industrial and commercial sources, direct dumping and disposal of sewage or liquid waste, disposal of toxic or hazardous waste, use of pesticides and chemical fertilizers, reclamations and seawalls construction on the lagoon perimeter) by sharing of information and knowledge and by implementing alternative, cost-effective approaches to improve compliance assurance (e.g., effective media and communications activities, self-reporting practices, 'whistle-blower' programs).

The project team will conduct, in collaboration with concerned authorities and local stakeholders, a detailed review of existing documentation relevant to environmental regulation in Tonga with special focus on FLC, identify key compliance issues and constraints, and formulate appropriate ways of mitigating the potential impacts of non-compliance. Positive and more effective compliance mechanisms will be identified and implemented to ensure that environmental concerns in the FLC areas are taken into account in the planning and management of the lagoon's ecosystem services, as well as in private and business operations, and in community practices.

c) Land-use planning/zoning in the lagoon catchment taking into account surface runoff, drainage design, etc., to control sedimentation and pollution

The aim of undertaking land-use planning and/or zoning activities in the FLC is to help protect the lagoon's water quality. The project will work closely with the Department of Environment and other key FLC stakeholders to develop and implement alternative options for managing agricultural practices and different land uses with sediment and pollutant control. Pilot villages/communities (3-4) will be selected from across the lagoon catchment areas targeted at areas where sedimentation and pollution by sanitation systems are of most concern (i.e. in Pea, Ha'ateiho, Nuku'alofa, Folaha, Nukuleka, Hoi, Mu'a, and Vaini).

These pilot communities will be engaged in a planning/zoning process comprising activities including i) trainings/workshops provided to leaders and key stakeholders in the pilot communities on the issues surrounding local protection of water quality and the value and benefit of local action, while developing an environmental inventory that takes into consideration the characteristics and locations of important ecosystems and ecosystem services within and surrounding the lagoon; ii) assessments of the effectiveness of water quality protection policies and strategies, as well as existing master plans and zoning ordinances (particularly the EMP FLS – assessment tools to be developed by the project

team and local experts); iii) identification of lagoon's water quality goals and objectives as well as priorities and techniques for changes in the plan; iv) preparation of a set of specific recommendations for amendments which will be proposed by the pilot communities/villages with support of other FLC communities to the respective authorities/jurisdictions and the FLC Management Committee; and v) implementation of the EMP FLS updating process (in line with activities described under Outcome 1.2).

COMPONENT 3: KNOWLEDGE MANAGEMENT

79. This component will improve awareness, communications, and education of FLC communities on IEMP and ecosystem services for promoting sustainable development in the Fanga'uta Lagoon Catchment. The FLC communities will be supported to gain knowledge and understanding to help them integrate environmental concern and low impact development approaches into their community development plans and actions. The efforts will ensure that the FLC communities and stakeholders are well-informed of the current issues of environmental degradation in the lagoon ecosystems, and that they are part of the process to formulate solutions to alleviate the problems.

Outcome 3.1 Increased awareness and appreciation of the ecosystem services of the Fanga'uta Lagoon

(Total cost: US$225,000; GEF: US$ 50,000; Co-financing: US$175,000)

80. The focus of this outcome will be interventions working in partnership with authorities and civil society to engage them in the design and production of awareness improvement activities targeted at a wide audience of FLC communities. The means of communication of the essential information to the authorities, villagers and different stakeholders concerning sitting, design, maintenance and monitoring of the ecosystem services of the Fanga'uta Lagoon and implications of IEMP for public health and wellbeing will be determined and implemented and key messages transmitted at both national and local level.

Output 3.1.1 Awareness programs conducted through the production and distribution of awareness materials; Production of project briefs, videos in local dialect and disseminated to various media; lessons learned shared with the PICs through the regional program support project

81. Local experts and volunteers will be explored, trained and utilized to work with the project team to determine a communication strategy of the awareness programs and to design, produce, and maintain learning and communication materials for the target audiences. Briefings, short training and focused meeting will be conducted to plan and implement the strategy as well as to build the team capacity.

a) Setting an Awareness and Communication Strategy

This output will help identify the objectives, processes and benefits of the lagoon ecosystem awareness and communication materials for key target audiences (particularly the FLC communities) at the local and national level. The task team will jointly design key substances created for the FLC awareness and communication purposes which will include the content knowledge about the values, conditions and trends of lagoon ecosystem services, as well as the concept and practice of integrated management approach towards conserving the lagoon's future. Effective awareness and communication materials will be selected (i.e., project brochures, media releases, video documentary in local dialect, feature press article, project web page on country website/links with partners) as well as channels of distribution at different target groups and levels will be determined.

b) Production, Distribution, and Utilization of Awareness Materials

New awareness and communication materials will be produced to support the implementation of FLC IEMP for improving the FLC ecosystems and ecosystem services and the realization of key issues including mangrove degradation, unsustainable fisheries, sedimentation and nutrient loadings into the

lagoon, pollution from domestic sources, and unsound land use in the FLC areas. Based on the agreed methods, the information and knowledge materials will be distributed to the target and wider audience through appropriate channels. In some cases, the materials will be utilized by the project team through specific trainings and workshops conducted as part of the project activities in Component 1 and Component 2.

c) Assessment of Production and Distribution of Awareness Materials

An awareness assessment exercise will be conducted by the project team in Year 3 to assess the FLC awareness and communication materials production, distribution, utilization as well as to identify remaining needs and gaps. The data will be collected at three levels which include the MEECCDMMIC and concerned stakeholders at national level, the FLC district offices, and the FLC villages. Officers and experts who are involved in the material productions and distribution processes will be interviewed, and the project task team and key informants will be included in the exercise. The participating FLC villages will be randomly selected and interviewed. All village volunteers serving the project implementation will be interviewed. The results of this assessment exercise will feed into the FLC IEMP updating process, as well as report to the FLC Management Committee and interested partners through the project progress reports.

d) Sharing of lessons learned with the Pacific R2R Program

To facilitate cross-country fertilization in the implementation of the regional Pacific R2R program, the project will work with the regional program support project in the sharing of lessons learned. Other avenues for collaboration will be agreed on during the implementation of both this MSP and the regional project.

2.3 PROJECT INDICATORS

82. The key performance indicators for assessing the achievement of the project objective and outcomes are identified as follows. These indicators, along with their baseline values, targets and means of verification, and those of the output level are listed in Section II Part I of this Project Document.

TABLE 4: Project Indicators and End-of-Project Targets

Indicator	End-of-Project Target
At Objective Level	
Status of completion and implementation of the FLC IEM Plan	FLC IEMP has been formulated by Year 2, accepted and implemented in Year 3 to recognize and promote the conservation and adaptive management of the ecosystem services of the Fanga'uta Lagoon and its catchment
Tracking Tool BD 1: Improved management effectiveness of existing and new protected area	About 80 hectares of mangroves and other biodiversity resources in the FL protected areas conserved and managed mainly for the sustainable use of natural ecosystems
Tracking Tool BD 2: Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation	Around 50 hectares of FLC area of production systems with increased vegetation cover
Tracking Tool LD 1: Sustained flow of services in agro-ecosystems	Application of enhanced capacity demonstrated (i.e., FLC IEMP, inter-agency governing body, awareness and communication strategy)
Tracking Tool LD 3: Integrated landscape management practices adopted by local	At least 5 of FLC awareness and communication materials produced and disseminated

Indicator	End-of-Project Target
communities Tracking Tool IWs 3: IW portfolio capacity and performance enhanced from active learning/KM/ experience sharing	A knowledge management website created & maintained Water quality improved through small demonstrations and monitoring mechanisms in place for project related indicators
At Outcome Level	
1.1. Functional enabling environments for conservation and integrated management of the Fanga'uta Lagoon Catchment (FLC)	Creation of a nationally recognized FLC Management Committee by Year 1 By Year 3 the feasibility of conversion of a FLC Management Committee into a National Interagency Council with a statutory mandate has been assessed and implemented as appropriate
1.2 Amendments to the environmental management plan of the Fanga'uta Lagoon Catchment	By mid-term, The existing EMP FLS has been updated incorporating IEM concepts and adaptive management approaches. By Year 3, updates/amendments to EMP FLS have been approved and adopted By the end of the project, the concerned authorities will institutionalize integrated ecosystem management and conservation objective for the FLC within the national development system.
2. Decline in negative development pressure on surrounding habitats and ecosystem services in the Fanga'uta Lagoon	By project end, key habitats (mangroves) and ecosystem services in FLC improved compared to baseline level
3. Number of awareness and communication materials produced and disseminated concerning the ecosystem services of the Fanga'uta Lagoon	Production of around 5 awareness and communication materials in various formats, which have been disseminated in relevant Agencies/ institutions (expanded NECCC sitting as Catchment Committee) as well as in all lagoon villages and nearby urban center of Nuku'alofa

2.4 RISK ANALYSIS AND KEY ASSUMPTIONS

83. **Threats to Biodiversity and Ecosystems Services:** The major threats in Tonga are similar to those encountered on many other small island developing states:

- Low Capacity, Enormous Distances and Inadequate Logistic Resources: Tonga consists of 172 islands (only 36 are inhabited) spread over a land area of approximately 700 km^2 within 720,000 km^2 of EEZ. The total population is just over 100,000, with more than 70% residing on the island of Tongatapu. The population density on the outer islands is relatively low. This disproportionate distribution of population results in an uneven allocation of managed resources in the outer islands. Most government departments, especially those dealing with natural resource management, are understaffed and have insufficient logistics to enable visitations and management these resources. Moreover many of the staff are on official travel representing Tonga at international environmental conventions and meetings, and drafting project proposals to secure funds for implementation of national needs.
- Habitat Destruction / Fragmentation: Few areas of primary forest ecosystems remain on Tongatapu, but there are some primary forests on steep and inaccessible slopes on 'Eua. These forests are threatened by fragmentation and habitat destruction due to the traditional system of land allocation which 'guarantees' parcel of land for all Tongan males. Thus there is an ongoing threat

of encroachment from expanding agriculture and invasive species into forested areas. In addition there are risks of devastating damage from cyclones and tsunamis to coastal forests. The capital city of Nuku'alofa on Tongatapu is continually expanding along coastal areas and into the inland with significant habitat destruction of forests. Mangrove forests in particular have been severely reduced due to urban development, construction of rock walls and jetties, as well as being used for solid waste disposal. Sand mining has also contributed to coastal erosion and loss of mangroves.

- Degradation of Land and Water Resources and Ecosystem Services: Terrestrial, coastal and marine ecosystems in Tonga are all threatened. The most significant threats to coral reefs are from: over-exploitation of fisheries resources (especially from traps and due to poor marketing practices); pollution (sewage seepage from poorly maintained septic systems and outflows from piggeries and other agricultural practices); nutrient overload (fertilizers) and sedimentation (construction, erosion from agriculture); damage from anchors, trampling at low tide while gleaning, and bashing corals during drive net fishing. Seagrass beds are also degraded from: poor fishing practices; pollution; and nutrient loading from the land. Poor agricultural practices are responsible for pollution from the land via groundwater, especially from: excessive application of fertilizer; harmful chemicals and pesticides; burning of agricultural waste; and setting of fires to clear land. Large volumes of POPs (persistent organic pollutants) and PCBs from electrical transformers have been dumped on land and these compounds are evident in Fagauta Lagoon. Finally, unsustainable beach sand mining has contributed to pollution and shoreline erosion.
- Climate Change Impacts and Tsunamis: Tonga has already experienced climate change damage with increases in the intensity of tropical cyclones, some coral bleaching, coastal flooding due to sea level rise and loss of protective natural barriers. Further damage will occur to the coral reefs from increasing ocean acidification as CO_2 emissions continue to increase. Severe storms will cause significant damage to forests, coral reefs, mangrove forests, other coastal areas, human infrastructure and possibly human health in Tonga. The tsunami of September 2009 was a wake-up call for governments of the Pacific to implement disaster risk management and early warning systems. This will be a component of the proposed projects.

TABLE 5: Project Risks Assessment and Mitigation Measures

Risks	Rating	Risk Mitigating Measures
Systematic approach and mechanisms lacking for biodiversity conservation and sustainable land use	Low	The project will introduce Ridge-to-Reef training and implementation for sustainable land use and biodiversity conservation with the relevant sectors of government in cooperation with NGOs and community organisations. Involvement of the noble landowners will be essential as they are the largest holders of land and especially forests, and are also senior decision makers in government. A more systematic approach to forest and biodiversity conservation will be developed by all stakeholders and incorporated into national policy. Capacity building in ICM will be emphasized with government and NGO staff, and community representatives.
Lack of political support and community buy-in for biodiversity conservation and sustainable land management	Medium	Tonga is in transition between hereditary rule and a representative democracy with power shared between elected officials and nobles. The project will ensure that both groups are involved in project planning and implementation, and offered R2R training. Large area forest replanting and land rehabilitation will require involvement of the nobles; for smaller areas the project will demonstrate to landholders the economic advantages of replanting with fruit trees and more productive coconuts. Small scale nurseries will be established through the involvement of schools, NGOs and religious groups to stimulate land rehabilitation.

Complex land tenure arrangements will impede land rehabilitation	Medium	Land tenure on Tonga is unusual with virtually all land belonging to the King and nobles, with much of this is leased in small parcels for subsistence agriculture. This presents particularly difficult challenges for conserving existing forests and rehabilitating agricultural lands. Broad scale tree planting on land held by nobles can be negotiated; however activities on land leased by individual land holders could be delayed. The project will emphasize economic benefits of land rehabilitation and develop demonstration farms. The same constraints do not apply for coastal lands and the marine environment which belong to the national government.
Lack of capacity in government staff and community groups to undertake project activities.	Low	The total population in Tonga is just over 100,000 with about 70% living on Tongatapu. There are insufficient people trained and employed in the ministries and departments for many of the land management tasks required in Tonga. There are even fewer on the outer islands. Similarly there are few effective community based NGOs able to unite communities for environmental management. The R2R project will provide post-graduate certificate level training and short course training for people involved in the project and in NGOs. Also qualified Tongans living out of the country will be notified of employment possibilities in project activities.
Climate change and tsunami/volcano threats to terrestrial and marine resources.	High	Climate change poses major long-term risks to all resources in Tonga with potentially stronger cyclones, changes in rainfall, sea level rise and coral bleaching plus ocean acidification. Similarly a repeat of the tsunami of September 2009 is possible, but not envisaged in the short-term of the project. The main objective of the proposed project is to build resilience in the islands and people to 'protect, retreat and accommodate' to these threats in the longer term.
Political conflicts could delay or disrupt project activities.	Low	The only major political disturbances in recent Tongan history occurred in November 2006 when pro-democracy demonstrations disrupted government functions in Nuku'alofa. The political situation changed with a majority of parliamentarians now elected by popular vote, and supplemented by appointed nobles. A repeat of these events is unlikely and if they occurred, it would probably only affect the capital on Tongatapu; the other islands would probably not be affected. Most of the project activities will occur outside Nuku'alofa, but similar disturbances would slow project activities. Similar disturbances could slow the proposed project, but no action can be planned for such a rare possibility.

2.5 INCREMENTAL REASONING AND EXPECTED GLOBAL, NATIONAL AND LOCAL BENEFITS

84. The proposed MSP will build up on and complement the efforts of the Kingdom of Tonga to conserve and sustain the ecosystem services of the Fanga'uta Lagoon and its catchment through integrated land-water-coastal management, while contributing to implementation of Pacific Island Multi-focal Area R2R approaches. Building up on the efforts in lagoon environmental management and planning for ecosystem health and human well-being, the GEF MSP will provide incremental funding for the provision of technical support to the government and other stakeholders including local communities to create an enabling environment for effective governance through integrated environmental planning and reduce anthropogenic pressure on the lagoon from unsustainable agriculture and competing resource uses through catalysing sustainable agricultural, water/land use, pollution reduction and habitat conservation. Technical assistance for the application of integrated environment management and awareness communications will catalyze the up-take of ecosystem protection and adaptive resource management methods resulting in a significant improvement of management effectiveness in marine protect areas and governance in managing ecosystem services of the lagoon and catchment ecosystems in Tonga.

85. This proposed MSP will deliver global environmental benefits by supporting the Kingdom of Tonga in the transition towards mainstreaming biodiversity conservation and sustainable use into production landscapes and sectors. The project will promote cooperative action among agencies concerned, thereby combining sustainable use and conservation with economic development objectives, and fostering joint planning of the sustainable use of the globally and nationally significant lagoon ecosystems. The project will contribute to enhance enabling environment for integrated landscape management in the Fanga'uta Lagoon and catchment areas while facilitating the adoption of integrated and adaptive management approaches by the governmant as well as the local communities. By increasing public awareness and understanding of the importance of lagoon's ecosystem services, by reducing conflicts among resource users through a ridge-to-reef approach, and by creating an environment for integrating protected areas and ecosystem conservation into development planning, the project will mainly contribute as a case study for efforts at improving global environmental governance as well as to the ultimate objective of the CBD, which is to promote the conservation of biodiversity and the sustainable use of its components. The project will also contribute to the realization of the UNCCD objective through aplication of "long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level." The proposed MSP will contribute to demonstrate results that flow of ecosystem services increased and maintained leading to improved the livilihoods of FLC communities.

86. The MEECCDMMIC will contribute US$650,000 in kind in the efforts to assist in land allocation and management, urban and land use planning, enviroment and climate change related activities. MAFFF especially, Fisheries, Agriculture and Forestry divisions engaged in activities in the catchment area as part of their normal mandate and duties, fisheries activities including the enforcement and compliance work, research and development and such. Forestry engaged with various land holders in various programme trying to replant trees such as coconut, sandalwood, various fruit trees and various forest trees for timber and wind breaker. Agiculture division work with NGOs in promoting organic farming and sustainable agro-farm system to reducing utilization of chemicals in the catchment area while maintain or improve yields.

87. Implementation of this MSP will be co-financed by UNDP by in kind (US$500,000) as well by as by other cofinanciers of US$6,150,000 in contributions for a total co-financing of US$6,650,000. Co-financing is derived from relevant projects that are being administered by MEECCDMMIC with funding coming from ADB, GIZ, IUCN and other development partners.

2.6 PROJECT CONSISTENCY WITH NATIONAL PRIORITIES OR PLANS

88. The project is consistent with Tonga's national priorities as in the Tonga Strategic Development Framework (TSDF) 2011 – 2014. Outcome Objective 7 stated that **Cultural awareness, environmental sustainability, disaster risk management and climate change adaptation be integrated into all planning and implementation of programmes, by establishing and adhering to appropriate procedures and consultation mechanisms.** Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications is one of the leading agencies for this particular Outcome Objective. The project is also consistent with Tonga's Joint National Action Plan on Climate Change and Disaster Risk Management (JNAP-CCADRM) which addresses some of the priorities.

89. In addition, the project is consistent with Tonga's national priorities as described in the Tonga's National Biodiversity Strategy & Action Plan (NBSAP) to promote the conservation and sustainable use of the country's biodiversity. Likewise, consistent with regional plans formulated to fulfill international obligations.

90. The Ministry's Corporate Plan clearly states its mandates, objectives and priorities of which this project has been aligned accordingly with its activities, as well as addressing issues highlighted in the Districts development plans around the lagoon area.

91. The ECC Office is currently reviewing some of the legislations related to the management of Fanga'uta Lagoon, with recommended amendments, to strengthen its leadership, coordinating and enforcement role for managing the Lagoon catchment area.

2.7 COUNTRY OWNERSHIP: COUNTRY ELIGIBILITY AND COUNTRY DRIVENNESS

92. The Government of Tonga, through an AusAid funded project, did a comprehensive study on Fanga'uta Lagoon in the late 1990s which culminated in the adoption of Fanga'uta EMP in 2001. One of the main components of this project is to update this EMP through a participatory approach to engage stakeholders and communities who are residing and using the lagoon catchment area.

93. The participatory approach was used to design and formulate this project document through engaging various stakeholders in the process. A number of consultations were held by means of a workshop, as well as one-to-one meetings with community leaders, government and non-government organisations, politicians and the private sector. With this approach, it is ensured that the participation of the stakeholders and communities are the basis for driving this project to achieve the desirable outputs relevant to the communities. Sustainability and ownership was the core thinking in this process. Involvement of the communities in the planning process to its implementation will give the people sense of ownership and the incentive to drive the project in the direction they feel will be more beneficial to them to improve their standard of living in the medium and long term.

94. In addition, fundamental principles and guidelines from the NBSAP, POWPA, UNCBD, JNAP, other related action plans and legislations aided the development of this document to ensure its coherence and complementary to other plans for a successful implementation of the project.

2.8 SUSTAINABILITY, REPLICABILITY AND POTENTIAL FOR SCALING UP

95. The Government of Tonga has demonstrated a sustained commitment to coastal ecosystem and protected area conservation by including the Fanga'uta Lagoon within the system of national protected areas. Continuing commitment is demonstrated by the Environmental Management Plan (EMP) for the Fanga'uta Lagoon System to reduce existing and potential pressure on the ecosystems of the current protected lagoon. The EMP includes coastal area zoning that demonstrate Tonga's commitment to sustainable land/water use and development planning to maintain the ecological integrity of the coastal lagoon region. The EMP updates and improvement on implementation capacity would increase sustainable economic benefits from developments that are integral and compatible with conservation of ecosystems and ecosystem services in the coastal lagoon and catchment. Inclusion of environmental and public awareness mechanisms within this project as well as involvement of local communities in management and planning decisions concerning development within and adjacent to the project sites will develop a broader grass roots understanding of linkage between long-term economic prospects for the human populations and ecological stability of the coastal lagoon ecosystems.

96. Sustainability and replicability are inherent to project design. The project will promote cooperative action among agencies concerned, thereby combining sustainable use and conservation with economic development objectives, and fostering joint planning of the sustainable use of the globally and nationally significant lagoon ecosystems. On-the-ground activities, promoting integrated sustainable use of biodiversity as well as conservation of ecosystem services of the Fanga'uta Lagoon Marine Reserve, will build on community knowledge and awareness providing the opportunity for continued grassroots support and partnerships, involving participation of local people (including women and youth groups) and traditional leaders, with local and national governments as well as the private and non-profit sectors. Thus, the

widespread adoption of integrated sustainable practices in the communities living adjacent to the lagoon and their continued application beyond the life of the project are envisaged.

97. The proposed MSP is also innovative and demand-driven, linking to positive changes in efficiency of policy measures for conservation and sustainable use of the lagoon ecosystems under pressure, enabling governmental organizations to translate innovative activity into tangible performance improvements, as well as rehabilitation of damaged landscapes and seascapes. The project will apply integrated approaches to improve, maintain and enhance the ecosystem services of the Fanga'uta Lagoon Marine Reserve by supporting sustainable fishery practices, coastal habitat (mangroves) conservation, sustainable agricultural practices and agro-ecosystem activities through appropriate extension and training, water quality improvement, and eco-tourism that creates awareness and provides income opportunity for local communities particularly women and young people. The model of working with local communities to identify common resource requirements (e.g., fisheries, water quality, erosion control) for conservation and community development needs and focusing investment on those common needs is one which may have broader application for conservation outside of traditional protected areas.

2.9 PUBLIC AWARENESS, COMMUNICATIONS, AND MAINSTREAMING STRATEGY

98. One of the key areas for successful implementation of a project is to have an appropriate and effective public awareness, communication and mainstreaming strategy that will deliver the message to the people in order to achieve the project objectives.

99. The mode of communication and type of public awareness will depend on the target audience. There will be a need for ongoing awareness throughout the project duration, in order to influence behavioural change and gain support from all audiences for the implementation of the project and the continuous management of the lagoon beyond its project life.

100. For effective management of multi-use areas, there will be a need to mainstream environmental issues that contribute to conservation and sustainable development into the national strategic development plans, institutional operational plans, and reflected in the community development plans.

2.10 ENVIRONMENTAL AND SOCIAL SAFEGUARDS

101. Environmental and social safeguards and associated policies and procedures are a cornerstone of technical and financial support that this project will strengthen to achieve sustainable poverty reduction, enhance the livelihoods of communities and protect their environment. The objective of these safeguards and associated policies and procedures is to prevent and mitigate undue harm to people and their environment and strive to develop benefits in the development process. More specifically, safeguard policies and procedures are designed to avoid, mitigate, or minimize adverse environmental and social impacts of projects and strategies, and to implement projects and strategies that produce positive outcomes for people and the environment.

102. Legislation pertaining to conservation is fragmented amongst line Ministries. Under the mandate of the MEECCDMMIC, the following legislations will ensure environmental and social safeguards:

- The Environmental Impact Assessment (EIA) Act 2003 goal is to avoid adverse and costly changes in the natural and human environment as a result of human actions. The Act ensures to protect human health and safety; avoid irreversible changes and serious damage to the environment; safeguard valued resources, natural areas and ecosystem components; and enhance the social aspects of the proposal.
- The Environmental Management Act 2010 states the functions of the ECC Office in relation to the management of the environment, including the preservation of wetlands and the management and protection of coastal areas; the conservation of endangered species; the preservation of biological

diversity; and aspects of the environmental management of international waters. It obliges the ECC Office to undertake awareness campaigns and to facilitate community participation in environment-related issues; and advice and coordinate Government in relation to matters of environmental management.

- Parks & Reserve Act 1988 can declare any area of land or sea to be a park or reserve. Parks is defined under this Act as every park, subject to any conditions and restrictions which the Authority may impose, shall be administered for the benefit and enjoyment of the people of Tonga and there shall be freedom of entry and recreation therein by all persons. A Reserve shall be administered for the protection, preservation and maintenance of any valuable feature of such reserve.

PART III: PROJECT IMPLEMENTATION ARRANGEMENTS

3.1 IMPLEMENTATION AND INSTITUTIONAL FRAMEWORK

103. The Project will be implemented through UNDP's **National Implementation Modality (NIM),** with the Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications (MEECCDMMIC) serving as the designated national executing agency ("*Implementing Partner*") of the project. MEECCDMMIC will have the technical and administrative responsibility for applying GEF inputs in order to reach the expected Outcomes/Outputs as defined in this project document. MEECCDMMIC, together with the Project Steering Committee (PSC), is responsible for the timely delivery of project inputs and outputs, allocating resources in an effective and efficient manner, and in this context, for the coordination of all other responsible parties, including other line ministries, local government authorities and/or UN agencies.

104. A **Project Steering Committee** (PSC), responsible for approving key management decisions of the project and will play a critical role in assuring the technical quality, financial transparency and overall development impact of the project, will be established as soon as this project is approved. The PSC will comprise of the MEECCDMMIC, UNDP and the proposed Fanga'uta Lagoon Catchment Management Committee as articulated in the Output 1.1.1 in section 2.2.

105. MEECCDMMIC will appoint the **National Project Director (NPD)** who is an organic member of the Ministry who will be responsible for ensuring the overall smooth implementation of the project in line with planned project objectives and outcomes as identified in this project document. The NPD will provide strategic support as needed to the project, particularly to ensure strong engagement from key national and local stakeholders and ensure that members of National Environment Climate Change Committee (NECCC), comprised of CEOs of line Ministries, are fully informed of the high-level policy objectives of the project.

106. **National Project Manager** (NPM) will be a dedicated professional designated for the duration of the project and report to NPD. The NPM's prime responsibility is to ensure, under the overall guidance from the PSC, that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost.

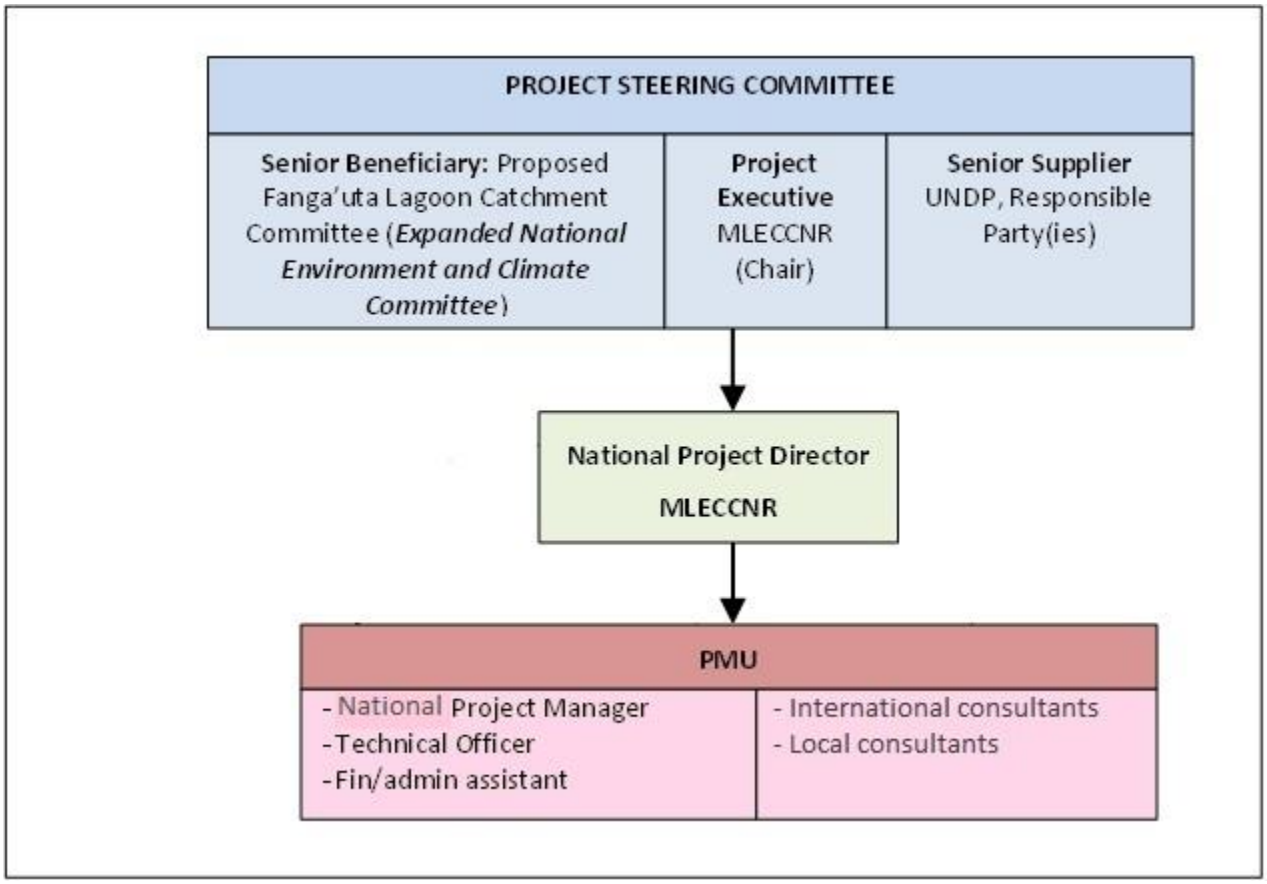
107. The NPM will be supported by a core team of technical and support staff forming the **Project Management Unit** (PMU) located within the MEECCDMMIC to execute project activities, including day-to-day operations of the project, and the overall operational and financial management and reporting. Supporting the PMU will be a team of consultants that will be hired in the course of project implementation.

108. **Project assurance:** The UN Joint Presence Office in Tonga headed by the UNDP Country Development Manager (CDM) located in Nuku'alofa, Tonga and UNDP Multi-Country Office located in Suva, Fiji will support project implementation by assisting in the monitoring of project budgets and

expenditures, contracting project personnel and consultancy services, and subcontracting and procuring equipment at the request of the MEECCDMMIC. On the technical side, the CDM and UNDP Fiji MCO will monitor progress of project implementation and achievement of project outcomes/outputs as per the endorsed project document. A designated Programme Officer will be assigned in the MCO to provide financial and technical monitoring and implementation support services. The UN Joint Presence Office is shared by a number of UN offices, including UNDP.

109. **Audit Requirements**: The project will be audited in accordance with UNDP Financial Regulations and Rules and Audit policies. The audit will be conducted by the National Auditor or any other local auditor recognized by both GOT and UNDP Fiji MCO.

Figure 4: Project Management Structure and Organigram



3.2 STAKEHOLDER INVOLVEMENT

110. Key stakeholders and their involvement in the Project are as follows:

a) Relevant government agencies: the Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications functions as the GEF Focal Point and hosts and chairs the National Environment and Climate Change Committee with representation from the planning and implementing sectoral departments, specifically Agriculture, Fisheries, Forestry, Tourism, Lands, PUMA, and NGOs. They were all involved in developing the project. Also consulted were the Ministry of Foreign Affairs and the Aid Management Division of the Ministry of Finance and National Planning.
b) The Tonga Trust, a coordinating body for many NGOs, the Civil Society Forum of Tonga, an umbrella group for other NGOs, particularly representing women's organizations and the Tonga National Youth Groups, which is a youth coordinating network, are members of the NECCC. Their role will be to ensure that the voices of communities, especially women, are heard in project determination and in participation to gain benefits from the project. Many of the NGOs will be involved in working with communities on aspects of this project. Tonga Trust provides community-based research and extension support to current activities; and Civil Society provides community assistance in allocating financial assistance to national projects under the Small Grants Programme.
c) Tonga National Fisheries Association is an umbrella NGO for fisheries. Their Mrole is to advocate and assist in the public awareness through all members (subsistence, artisanal, and commercial fishermen. They will be involved in working with communities on aspects of this project.
d) International organizations: UNDP, the GEF Implementing Agency, is strengthening regional governance of coastal and marine resources through its support for Pacific countries. The UNDP role is to ensure that the GEF Secretariat is continually informed of activities and progress through M&E via an Annual Monitoring Report. The UNDP coordinates with UNEP and UNFAO for the implementation of the Ridge-to-Reef and IWRM projects in all 14 Pacific countries. FAO will be consulted on fisheries aspects, especially in the implementation of alternative fishing industries to reduce pressure on coastal fisheries. In addition, UNDP will coordinate with the SPC, especially with the technical arm SOPAC, and with ADB and SPREP on technical and coordinating matters and involving contacts with Pacific country governments.
e) International NGOs and Agencies: UNDP will involve key NGOs and other CROP agencies during the negotiation phase and then later during implementation in some aspects of the design of the project and in implementing specific themes. Specifically the IUCN, WWF, WCS and the University of the South Pacific will assist in implementing some aspects.
f) The business community/corporate sector: where appropriate UNDP and the Tongan Environment and Climate Change Committee will request the assistance of the corporate sector in those aspects requiring special expertise, such as the design and construction of engineering features as water and sewage treatment systems, and hard structures to combat rising sea levels.
g) The major donors and implementing agencies involved in parallel projects in Tonga will be consulted regularly to ensure maximal benefits are derived from the GEF funds by avoiding overlaps and selecting from gaps identified by these agencies. Principal amongst these are: the EU and GIZ, AusAID, Governments of Japan and USA.
h) FLC Communities will be contacted through NGOs and church groups with one group on Tongatapu running a trust fund for land rehabilitation.

111. In Part I, 1.3 Sectoral, Institutional and Policy Context, full explanation of major stakeholders' role in relating to this project.

PART IV: MONITORING AND EVALUATION PLAN

112. Baseline and monitoring studies of key environmental indicators reflecting hydrological cycles, water quality, limnology and fisheries within the wetlands are an integral part of the project. The project includes financing for training, institutional development and improvement of research facilities to carry out long-term ecological monitoring studies of the coastal wetlands included in the project. The project would also finance pilot projects to test and evaluate feasibility of development options identified during the early phase of the project.

4.1 MONITORING AND REPORTING

113. The monitoring and evaluation (M&E) scheme will be applied in accordance with the established UNDP procedures throughout the project lifetime. As an implementing partner, MEECCDMMIC, together with the UNDP Multi-Country office in Fiji will ensure the timeliness and quality of the project implementation. The M&E plan will be implemented as proposed in Table 6. Technical guidance and oversight will be also provided from the UNDP's Regional Bureau for Asia Pacific, as well as the Project Steering Committee (PSC).

114. **Project start**: A Project Inception Workshop (IW) will be held within the first 2 months of project start with those with assigned roles in the project management, AF, UNDP MCO and where appropriate/feasible, regional technical advisors as well as other stakeholders. The IW is crucial to building ownership for the project results and to plan the first year annual work plan.

115. **Quarterly report**: the progress made shall be reported to UNDP Multi-Country office in Fiji and be monitored in the UNDP Enhanced Results Based Management Platform. Based on the initial risk analysis submitted, the risk log shall be regularly updated in UNDP corporate system (ATLAS). Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).

116. **Annual Project Review/Project Implementation Reports (APR/PIR)**. This report combines both UNDP and GEF reporting requirements. It is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. This key report shall be prepared by the National Project Manager, shared with the Project Board and submitted to UNDP CO for comments, after finalized will send to RTA for clearance. . The APR/PIR will be prepared with progresses against set goals, objectives and targets, lessons learned, risk management and detailed financial disbursements.

117. **Periodic Monitoring through site visits**: UNDP CO will conduct visits to project sites based on the agreed schedule in the project's Annual Work Plan to assess, at first hand, project progress. Other members of the PB may also join these visits.

118. **Project Terminal Report**: During the last three months of the project, the Project Manager/PMU will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met and missed, structures and systems implemented, etc. and will be the definitive statement of the Project's activities over the three-and-a-half-year duration. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

119. The budgeted M&E plan is as follows:

Table 6: M&E Activities, Responsibilities, Budget and Timeframe

Type of M&E activity	Responsible Parties	Budget US$	Time frame
Inception Workshop (IW)	▪ Project Manager ▪ UNDP CO	8,000	Within first four months of project start up
Inception Report	▪ Project Team ▪ UNDP CO	None	Within one month from IW
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Manager ▪ Project team	Included in PMU budget	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project manager and team ▪ UNDP CO ▪ UNDP RBAP (First PIR only)	None	Annually
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly/ Annually
Final Evaluation	▪ Project team, ▪ UNDP CO ▪ Independent Consultant	30,000	At least one month before the end of project implementation
Project Audits	▪ UNDP CO ▪ Project manager and team	14,000	Following UNDP finance regulations and rules
Visits to field sites	▪ Project staff ▪ Government representatives	Included in operational costs	At all stages of project implementation
TOTAL Indicative COST		**US$ 52,000**	

Note: The costs indicated here do not include the costs associated with UNDP staff. Those UNDP related costs are covered by the MIE fee.

4.2 INDEPENDENT EVALUATIONS, AUDITS AND FINANCIAL REPORTING

120. **Terminal Evaluation and Project Closure:** An independent Final Evaluation will take place 3 months prior to the final PB meeting. The final evaluation will focus on the delivery of the project's results as initially planned,. The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordination Unit and UNDP-GEF. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

121. **Project Audits**: The project will be audited in accordance with UNDP Financial Regulations and Rules and Audit policies. The audit will be conducted by the National Auditor or any other local auditor recognized by both GOT and UNDP Fiji MCO.

4.3 Learning and knowledge sharing:

122. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. This includes the regional program support project "Ridge

to Reef: Testing the Integration of Water, Land, Forest & Coastal Management to Preserve Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods in Pacific Island Countries" and all the projects under the Pacific R2R Program as mentioned earlier.

123. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

124. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

4.4 Communications and visibility requirements:

125. Full compliance is required with UNDP's Branding Guidelines. These can be accessed at http://intra.undp.org/coa/branding.shtml, and specific guidelines on UNDP logo use can be accessed at: http://intra.undp.org/branding/useOfLogo.html. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: http://www.thegef.org/gef/GEF_logo. The UNDP logo can be accessed at http://intra.undp.org/coa/branding.shtml.

126. Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf. Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

127. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

SECTION II: STRATEGIC RESULTS FRAMEWORK (SRF) AND GEF INCREMENT

PART I: STRATEGIC RESULTS FRAMEWORK

LIST OF OUTPUTS PER OUTCOME AS PART OF THE SRF

Project's Development Goal: To maintain and enhance Pacific Island countries' (PICs) (i.e., Tonga's) ecosystem goods and services (provisioning, regulating, supporting and cultural) through integrated approaches to land, water, forest, biodiversity and coastal resource management that contribute to poverty reduction, sustainable livelihoods and climate resilience.	
Project's Immediate Objective: To conserve the ecosystem services of the Fanga'uta Lagoon through an integrated land, water and coastal management approach thereby protecting livelihoods and food production and enhancing climate resilience.	
Outcomes:	**Outputs:**
Multi-stakeholder management system established to guide the updating of the EMP FLS and implementation of the FLC Integrated Environmental Management Plan (IEMP)	• Capacity of NECC and FLC Stakeholders enhanced to more effectively plan and implement an integrated lagoon ecosystem management approaches • Measures delivered to fully engage the Fanga'uta Lagoon Catchment (FLC) communities in lagoon ecosystem management
Participatory updating of the Fanga'uta Lagoon Catchment IEMP completed, adopted, endorsed and budgeted for	• FLC IEMP prepared and completed; establishing technical, biophysical, oceanographic, socioeconomic and demographic baselines; updating the EMP completed in 2001 with additional parameters to be established • FLC IEMP adopted, mainstreamed and funded • Multi-stakeholder participatory mechanisms conducted to ensure adaptive management through monitoring and evaluation of FLC IEMP development and interventions
Improved conditions of critical lagoon habitats, productivity, water quality and fish production through the implementation of priority interventions identified in the IEMP	• Areas of approximately 50 ha of the lagoon's major coastal habitats (mangroves stands) restored • Mechanisms set up to guarantee participatory fishing area and sustainable fisheries resources management by the FLC communities • Eco-tourism awareness to FLC community conducted and local initiatives demonstrated • Activities based on sustainable land and forest management demonstrated in the catchment areas • Capacity for Fanga'uta Lagoon water quality control strengthened and on-site activities

	demonstrated
Increased awareness and appreciation of the ecosystem services of the Fanga'uta Lagoon	• Awareness programs conducted through the production and distribution of awareness materials

INDICATOR FRAMEWORK AS PART OF THE SRF

125. The performance indicators contained in the SRF below are all 'SMART' (Specific, Measurable, Achievable, Relevant and Time-bound). The choice of indicators is based on their pertinence to the underlying assumptions in the analysis of project objective and outcomes, while reflecting GEF's Tracking Tools and UNDP's IRRF indicators. Some process-oriented indicators have been selected from the IWRM Guidelines for SIDs[20] and international guidelines for ICM[21].

Goal: To maintain and enhance Tonga's ecosystem goods and services (provisioning, regulating, supporting and cultural) through integrated approaches to land, water, forest, biodiversity and coastal resource management that contribute to poverty reduction, sustainable livelihoods and climate resilience.

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	Baseline	Target		
Objective: To conserve the ecosystem services of the Fanga'uta Lagoon and Catchment (FLC) through an integrated land, water and coastal management approach thereby protecting livelihoods and food production and enhancing climate resilience	Status of completion and implementation of the FLC IEM Plan	The Fanga'uta Lagoon and Catchment faces two major barriers for its conservation and sustainable management at present: i) degradation of ecosystem services and ii) acquiring new approach, method, knowledge and tool.	FLC IEMP has been formulated by Year 2, accepted and implemented in Year 3, to recognize and promote the conservation and adaptive management of the ecosystem services of the FLC	Existence of a functional lagoon management authoritative body and meeting reports Government publications and communication materials from Outcome 3 Project Reports and publications	The Tonga Government is willing to designate, support, and promote IEM and ecosystem services concepts within FLC. MEECCDMMIC is prepared to undertake efforts to coordinate and enhance its support to conserve and manage the ecosystems of FLC. Collaboration among concerned government agencies and other stakeholders is achieved in order to create a national policy environment conducive for integrated management of FLC.

[20] Chase, Vasantha, et.al. 2012. *Integrated Water Resources Management Planning Approach for Small Island Developing States*. UNEP, Nairobi
[21] Cicin-Sain, Biliana and Robert Knecht. 1998. *Integrated Coastal and Ocean Management: Concepts and Practices*. Washington, DC: Island Press.

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
	Tracking Tool BD 1: Improved management effectiveness of existing and new protected area	The Fanga'uta Lagoon marine reserve and catchment covers 2,835 ha of water and 8,000 ha of land having significant agricultural, coastal biodiversity, and other ecosystem services value	About 80 hectares of mangroves and other biodiversity resources in the FL protected areas conserved and managed mainly for the sustainable use of natural ecosystems	Reports from project annual M&E activities GEF BD Tracking Tool reports	There is effective involvement of all institutions and stakeholders who have a role to act in conserving and sustainable use of lagoon biodiversity and ecosystem services.
	Tracking Tool BD 2: Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation		10,800 hectares of the FLC landscape / seascape directly or indirectly contribute to biodiversity conservation or sustainable use of its ecosystem services		
	Tracking Tool LD 1: Sustained flow of services in agro-ecosystems	The Fanga'uta Lagoon has been facing pressures on agro-ecosystems and natural resources from competing land uses in the wider landscape. No sustainable agricultural practices are currently implemented in the lagoon catchment areas.	50 hectares of FLC area of production systems with increased vegetation cover	Reports from project annual M&E activities GEF LD Tracking Tool reports	Continued political commitment at the national and local levels in incorporating SLM into development plans and practices
	Tracking Tool LD 3: Integrated landscape management practices adopted by local communities		Application of enhanced capacity demonstrated (i.e., FLC IEMP, inter-agency governing body, awareness and communication strategy) Production of a series of FLC awareness and communication materials produced		

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
			and disseminated A project website or webpage created & maintained		
	Tracking Tool IWs 3: IW portfolio capacity and performance enhanced from active learning/KM/ experience sharing	Limited local capacity exists for overseeing and monitoring of water quality in the lagoon	Water quality improved through small demonstrations and monitoring mechanisms in place for project related indicators	Reports from project annual M&E activities GEF TWs Tracking Tool reports	Government, private business, and local communities actively participate and contribute in capacity building activities as assumed.

Project Components/Outputs:

Component 1:	**Appropriate Governance of Fanga'uta Lagoon Catchment Areas and Integrated Management of Lagoon Ecosystems**
Outcome 1.1	Multi-stakeholder management system established to guide the updating of the EMP FLS and implementation of the FLC Integrated Environmental Management Plan (IEMP)
Output 1.1.1	Capacity of NECC and FLC Stakeholders enhanced to more effectively plan and implement an integrated lagoon ecosystem management approaches
Output 1.1.2	Measures delivered to fully engage the Fanga'uta Lagoon Catchment (FLC) communities in lagoon ecosystem management
Outcome 1.2	Participatory updating of the Fanga'uta Lagoon Catchment IEMP completed, adopted, endorsed and budgeted for
Output 1.2.1	FLC IEMP prepared and completed; establishing technical, biophysical, oceanographic, socioeconomic and demographic baselines; updating the EMP completed in 2001 with additional parameters to be established
Output 1.2.2	FLC IEMP adopted, mainstreamed and funded
Output 1.2.3	Multi-stakeholder participatory mechanisms conducted to ensure adaptive management during the preparation, implementation,monitoring and evaluation of FLC IEMP
Component 2:	**Implementation of the Integrated Environmental Management Plan for the Fanga'uta Lagoon Catchment**
Outcome 2.1	Improved conditions of critical lagoon habitats, productivity, water quality and fish production through the implementation of priority interventions identified in the IEMP
Output 2.1.1	Areas of approximately 80 ha of the lagoon's major coastal habitats (mangroves stands) restored
Output 2.1.2	Mechanisms set up to guarantee participatory fishing area and sustainable fisheries resources management by the FLC communities
Output 2.1.3	Eco-tourism awareness to FLC community conducted and local initiatives demonstrated
Output 2.1.4	Activities based on sustainable land and forest management demonstrated in the FL catchment areas

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
Output 2.1.5 Capacity for Fanga'uta Lagoon water quality control strengthened and on-site activities demonstrated **Component 3: Knowledge Management** **Outcome 3.1** Increased awareness and appreciation of the ecosystem services of the Fanga'uta Lagoon Output 3.1.1 Awareness programs conducted through the production and dissemination of awareness materials					
Outcome 1.1: Multi-stakeholder management system established to guide the updating of the EMP FLS and implementation of the FLC Integrated Environmental Management Plan (IEMP)	Functional enabling environments for conservation and integrated management of the Fanga'uta Lagoon Catchment (FLC)	Integrated multi-stakeholder mechanism is not established to the existing FLC management.	Creation of a nationally recognized FLC Management Committee by Year 1 By Year 3 the feasibility of conversion of a FLC Management Committee into a National Interagency Council with a statutory mandate has been assessed and implemented as appropriate	Existence of a functional lagoon management authoritative body and meeting reports Project reports and publications	IEM is based on long-term strategic visions and links different policies at different administrative and stakeholder levels to ensure coherency, this carries the risk that its application will be given different interpretation in each of the management systems and may cause conflicts in implementation.
Output 1.1.1: Capacity of NECC and FLC Stakeholders enhanced to more effectively plan and implement an integrated lagoon ecosystem management approaches	Status of a multi-stakeholder FLC management authority with dedicated staff and sufficient budget	Department of Environment and Climate Change (DECC) has been designated by the Cabinet to implement the EMP FLS, but no clear provision on financial and other commitments required for plan implementation.	Concerned departments, ministries, partners and stakeholders have all set up contact points to implement IEM concept for FLC and have adopted ecosystem services consideration in key development policies and legislation. By the project end, establishment of a statutory mandate for	Government reports and interagency communications FLC Management Committee meetings and reports Project reports and publications Existence of FLC Interagency Council Secretariat and office	Clearly defined sets of key stakeholders and their engagement Political commitment to designate, support, and promote multi-stakeholder management system Potential local and international donors will engage in project implementation and provide necessary support to ensure long-term achievements.

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
			the long-term management of FLC		
Activities: a) Establish a Project Management Unit (PMU) to execute all project activities at national and local levels and support the Fanga'uta Lagoon Catchment Management Committee (FLCMC) for the duration of the project; staff recruitment and hiring b) A review of FLCMC composition, mandates and functions; a ToR of FLCMC, with additional ToR for FLCMC as the Project Steering Committee, formulated and agreed during its first meeting; the FLCMC formally established to convene its duties within first three months of project and regular biannual scheduled c) Establish project advisory (or expert) groups or sub-steering committees as deem necessary and their ToR formulated, as needed d) PMU to assess and service national and local training needs in environmental policy, legislation, lagoon and catchment management, ecosystem services assessment, and communication skills e) Develop training courses and materials on Integrated Environmental Management (IEM) to improve awareness of IEM of FLCMC members and senior management in the government sector; trainings conducted within 6 months of project inception f) Formulate a draft statutory mandate of a 'Tonga Interagency Council on FLC' to be assessed by Year 3 and adopted before the end of the project					
Output 1.1.2: Measures delivered to fully engage the Fanga'uta Lagoon Catchment (FLC) communities in lagoon ecosystem management	Number of FLC villages and concerned entities involved in EMP updating and implementation Number of individuals and/or organizations engaged in design and implementation of mini-projects from Outcome 2	The existing EMP FLS was prepared in collaboration with 11 government agencies, three NGOs, and more than 20 communities around FL.	By mid-term, all of FLC villages and concerned entities participate in EMP updating and implementation of relating mini-projects.	Lists of FLC community participants in project activity reports Stakeholder survey demonstrates that FLC communities are fully engaged in the updating and implementation processes. Mid-term and Final project evaluation reports	Continued political support and commitment for engaging FLC communities into the planning and implementation processes. Land and lagoon resource tenure issues will not providing negative motivation discouraging active participation in IEM process. Clearly defined and recognition of stakeholder (FLC community) groups Sufficient interested, receptive individuals available for capacity building activities
Activities: a) Consolidate identification of key FLC stakeholders b) Initiate the consultative process in FLC c) Develop a draft strategy for community action, approaches and functions					

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
d) Sponsor and organize bi-annual lagoon and catchment NGO and stakeholders forums e) Undertake a selection of demonstrations (or mini-projects) in FLC areas; mini-projects undertaken within 12-18 months of project inception to test replicability and for taking to scale during the FLC IEMP implementation (after Year 3) f) By Year 2, establish a FLC community-based research and knowledge management center to generate lagoon community action and positive social change through the use of multiple knowledge sources and networks					
Outcome 1.2: Participatory updating of the Fanga'uta Lagoon Catchment IEMP completed, adopted, endorsed and budgeted for	Amendments to the environmental management plan of the Fanga'uta Lagoon Catchment	The EMP FLS, a multi-zoning plan, was approved by the cabinet, but limited implementation due to administrative and budget constraints.	By mid-term, The existing EMP FLS has been updated incorporating IEM concepts and adaptive management approaches. By Year 3, updates/amendments to EMP FLS have been approved and adopted By the end of the project, the concerned authorities will institutionalize integrated ecosystem management and conservation objective for the FLC within the national development system.	Publication of the EMP FLS Update (or FLC IEMP) Government publications and communication materials from Outcome 3 Project Reports and publications	Continued political and administrative commitment for integrating IEM into medium- and long-term FLC planning as well as in national development planning Key stakeholders at the national and local levels maintain their support and involvement during plan updating, reviewing, and endorsement processes. Institutions receptive to adaptive change
Output 1.2.1: FLC IEMP prepared and completed; establishing technical, biophysical, oceanographic, socioeconomic and demographic baselines; updating the EMP	Status of FLC IEMP baseline review and findings completed with key parameters described	The EMP FLS was prepared during 1988-2001 based on scientific information and community consultation.	By Year 1, updating on situation analysis of ecosystems degradation and ecosystem services management in FLC completed	EMP FLS Update reports Draft FLC IEMP (or EMP FLS Update) available for review and endorsement Preparatory Task Force	Sufficient networking among regional, national and local experts for exchange of technical information, knowledge and experience across disciplines

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
completed in 2001 with additional parameters to be established				meeting minutes and reports	
Activities: a) Conduct a detailed review on the existing EMP FLS, update data, and identify information gaps on demand for and supply of the key ecosystem services in FLC b) Consolidate the network of FLC environmental and socio-economic experts c) Link the FLC management initiative to national development planning and programs and the activities of national and local NGOs as well as the private sector d) Evaluate current national policy, legal, institutional and human resource arrangements and utilization in respect to FLC coordination and joint management e) Formulate national and local policy initiatives to facilitate FLC coordination and joint planning f) Compile demographic framework for FLC from published sources g) Commission socio-economic surveys in FLC areas to assess current and future patterns of demand for ecosystem services in FLC h) Establish area-wide patterns of demand; assess opportunity costs of ecosystem services across FLC areas i) Produce working socio-economic framework to integrate demographic and demand characteristics j) Identify environmental hot spots and define environmental system limits and parameters; evaluate limits of sustainable use in space and time k) Convene expert group meetings on FLC environmental policy, legislation and management and publish the results l) Draft a detailed FLC IEMP setting strategic functional priorities and fostering multiple uses m) Present the final draft of FLC IEMP to local and national fora; dissemination of draft FLC IEMP to wider audiences					
Output 1.2.2: FLC IEMP adopted, mainstreamed and funded	Status of adoption, endorsement and funding of the FLC IEMP	Implementation of the EMP FLS has been a challenge due to the lack of financial commitment and sectoral differences.	By Year 3, the FLC IEMP adopted By project end, an annual budget request of key concerned ministries has reflected the Administration's priorities in support of the FLC IEMP.	Notification of the Plan in Official Gazette or policy documents Minutes of meetings Project M&E reports	Continued political support and commitment to materialize the Plan Collaboration among concerned government agencies and other stakeholders is achieved.
Activities: a) Prepare and negotiate an updated EMP FLS (FLC IEMP) on the basis of FLC community and stakeholder consultation b) Clearly delineate responsibilities in implementation of the FLC IEMP across government agencies and other stakeholders c) Solicit commitments from the government (national and local levels)					

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
d) Develop guidelines on implementing the FLC IEMP (an updated EMP FLS), including lagoon-specific and broader governmental policy commitments and financial obligations, with well-designed ecosystem service and sector indicators e) Organize biannual capacity building activities for development policy makers and the wider public on FLC IEMP mainstreaming f) Confirm government's commitments g) Major agency-donor conference to discuss the final draft of the FLC IEMP and solicit support for implementation h) Consensus on timetable for FLC IEMP implementation i) Confirm donors' commitments j) Present the Final Draft FLC IEMP to the FLCMC for adoption k) Prepare draft FLC management agreements and protocols for consideration by the FLCMC and concerned departments/ministries					
Output 1.2.3: Multi-stakeholder participatory mechanisms conducted to ensure adaptive management during the preparation, implementation, monitoring and evaluation of FLC IEMP	Regular monitoring of current status of lagoon environment and ecosystem services through a set of measurable key indicators and a response system established that enables modifying key indicators	There exists neither clearly defined monitoring indicator nor response system in FLC management.	By Year 2, monitoring data and information prepared By mid-term, a monitoring plan developed and implemented to track FLC system status and uncertainties including climate change impacts By end of project, FLC system monitoring established and fully functioned	Project reports and technical documents Annual monitoring reports Communication materials and website from Outcome 3	Adaptive Management is conceptually concerned with learning, knowledge integration, and experimentation. This requires from start improvement of the understanding of the lagoon system by initiating discussions among the concerned stakeholders and FLC communities. FLC communities and other stakeholders are ready and willing to participate in adaptive management activities.
Activities: a) Engage concerned government ministries and statutory authorities in identifying related issues and priorities, as well as adaptation options, to address climate change in the FLC IEMP (during the EMP FLS updating processes) b) Develop monitoring and evaluation procedures; planning for implementation c) Confirm commitments to schedule and allocate resources for timely monitoring and assessment of the status of the Fanga'uta Lagoon and catchment areas d) Identify key monitoring indicators and locations e) Implement community-based activities to conduct regular monitoring of the status of the Fanga'uta Lagoon and catchment areas f) Produce annual reports on FLC IEMP implementation and progress; communicate M&E results through the FLCMC and project-related meetings					

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
Outcome 2.1: Improved conditions of critical lagoon habitats, productivity, water quality and fish production through the implementation of priority interventions identified in the IEMP	Status of surrounding habitats and ecosystem services in the Fanga'uta Lagoon	Baselines to be quantified and updated per system in Year 1	By project end, key habitats (mangroves) and ecosystem services in FLC improved compared to baseline level	Field survey data and technical reports using rapid assessment of ecological change methods Activity reports and communication materials Reports from project annual M&E activities GEF TWs Tracking Tool reports	Local communities and key stakeholders will actively engage in assessment and management of the target ecosystems and their services.
Output 2.1.1: Areas of approximately 80 ha of the lagoon's major coastal habitats (mangroves stands) restored	Areas of mangroves in FL	Baselines to be quantified and updated in Year 1	About 80 hectares of mangroves and other biodiversity resources in the FL remained stable, protected areas conserved and managed mainly for the sustainable use of natural ecosystems	Technical reports and government publications	Awareness improvement activities conducted Political commitment at the national and local levels
Activities: a) Develop criteria and indicators for sustainable management of mangrove resources and ecosystem services in FL b) Develop monitoring and evaluation procedures c) Identify key mangrove conservation hot spots and necessary actions to rehabilitate and maintain conditions d) Produce a Manual on Mangrove Nursery Techniques e) Organize biannual on-site trainings for ecological mangrove rehabilitation f) Sponsor and organize community-based mangrove restoration programs involving local youth and women in raising mangrove saplings and maintaining the mangrove nursery g) Evaluate the results and define limits of sustainable use in space and time					
Output 2.1.2: Mechanisms set up to guarantee participatory	Status of lagoon fisheries (as contributing to	Quantity and quality of fish and shellfish catches in the lagoon	A total area inside the lagoon have been delineated for	Stakeholder meeting minutes and reports Technical reports and	Government support and commitment to manage lagoon fisheries resources for

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
fishing area and sustainable fisheries resources management by the FLC communities	increased fish harvests, improved livelihoods, and healthy lagoon ecosystems)	have declined rapidly, leading to increasing conflict and social tension among different user groups	fisheries conservation and sustainable fisheries management (to be determined during implementation)	government documents Project reports and communication	sustainability of ecosystems and for livelihood improvement Local stakeholders are ready and willing to share information, discuss issues and agree on solutions
Activities: a) Review of current status of supply of and demand for fisheries resources in the lagoon through participatory survey and assessment b) Review of existing legal frameworks that govern fisheries activities in the lagoon; consolidate expert opinions on sustainable fisheries management in FL c) Organize technical workshops and consultative meetings to be participated by concerned government agencies and local communities aiming to define and identify managed areas for fish conservation and sustainable utilization. d) Evaluate the results and define limits of sustainable use in space and time					
Output 2.1.3: Eco-tourism awareness to FLC community conducted and local initiatives demonstrated	Status of eco-tourism activities in FLC	Baselines to be quantified and updated in Year 1	At least 2 proposals to promote eco-tourism in FLC have been received from local tourism service providers At least 200 women and 200 youth have been engaged in eco-tourism activities	Business proposals Community surveys reports Project reports, publications, and communication materials from Outcome 3	The economy will support increased returns on investment in eco-tourism practices. Sufficient interested, receptive individuals and organizations available for training/capacity building
Activities: a) Prepare a detailed report on the participatory FLC eco-tourism program development strategy and implementation plan b) Identify and execute demonstration and pilot projects to promote eco-tourism in FLC involving experienced tour organizers, local entrepreneurs and community association c) Organize and/or sponsor trainings, workshops, and awareness campaigns for engaging FLC communities in sustainable eco-tourism, focusing on female villagers and youth living in the FLC areas d) Evaluate the results and define limits of sustainable eco-tourism business practices					
Output 2.1.4: Activities based on sustainable land and forest	Areas with improved vegetation in the lagoon catchment	There is no management scheme to regulate or monitor	A total areas of 50 ha with improved vegetation cover in	Project reports, publications, and training materials	Land and resource tenure issues will not provide negative motivation discouraging

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
management demonstrated in the FL catchment areas	Number of trainings and participants	land use practices which include cash cropping and free-ranging domestic animals developments.	the FLC areas have been established or replanted Biannual trainings on sustainable land management practices conducted and reported with at least a total of 60 participants attended		adoption of improved practices. Sufficient interested, receptive individuals and organizations available for training/capacity building
Activities: a) Commission community surveys to identify areas and methods of tree planting along the lagoon's shores and watershed areas b) Organize an annual campaign to plant trees and raise public awareness and soil conservation c) Conduct biannual trainings on sustainable land management practices to minimize pollution loadings into the lagoon targeting villagers and landowners living in the lagoon watershed areas d) Evaluate the results and define limits of sustainable land management practices in space, method and time					
Output 2.1.5: Capacity for Fanga'uta Lagoon water quality control strengthened and on-site activities demonstrated	Measures to control pollution discharged from domestic and other sources adopted and enforced Number of demonstration/pilot activities as well as on-site trainings and participants	Water quality in the lagoon has decreased and the amount of floating debris has increased over the years, potentially from agriculture, domestic sources, and other development activities in the surrounding lagoon catchment.	A set of recommendations for improvement of water quality in the lagoon have been prepared and adopted for FLC IEMP At least one training course on sanitation improvement and related technical knowledge targeting FLC communities conducted At least one on-site demonstration/pilot activity implemented	Technical review reports and fact findings Project reports, publications, and communication materials from Outcome 3	Collaboration among concerned government agencies and other stakeholders is achieved. Authorities, politicians, and land owners commit to support land-use planning/zoning methods as assumed Sufficient interested, receptive individuals and organizations available for training/capacity building

<table>
<tr><th rowspan="2">Project Strategy</th><th colspan="3">Objectively Verifiable Indicators</th><th rowspan="2">Sources of Verification</th><th rowspan="2">Risks and Assumptions</th></tr>
<tr><th>Indicator</th><th>Baseline</th><th>Target</th></tr>
<tr><td colspan="6">Activities:
a) Review the current situation on the nature and extent of agricultural chemical fertilizer/pesticide usage and urban wastewater discharge (including domestic, commercial and industrial sources) in the FLC areas
b) Select a methodology for identifying the nature and extent of pollution discharged into the Fanga'uta Lagoon, and issue scoping
c) Analyze historical water quality monitoring data relative to prevailing environmental conditions to identify links between off-site movement of pollution and factors such as: vegetation cover (height and density of trees); landscape (soil, slopes, buffer strips); climatic conditions (rainfall events, soil dryness index); and methods of chemical pesticide/fertilizer application (broad-acre, point, aerial, ground based) as well as waste disposal from point sources and non-point sources; define information and data gaps
d) Identify appropriate technologies and systems for controlling pollution from domestic sources in FLC areas
e) Identify and execute demonstration and pilot projects to minimize impacts of domestic sources of pollution in target FLC villages
f) Organize on-site trainings and workshops on sanitation improvement and related technical knowledge targeting key FLC communities
g) Conduct a detailed review and evaluation of the use existing legal and institutional instruments for control of water quality in the lagoon; identify key compliance issues and constraints; and recommend appropriate ways to mitigating the existing and potential impacts of non-compliance
h) Organize annual trainings for key concerned decision-makers and community leaders as well as other stakeholders on land-use zoning/planning
i) Evaluate the results and define limits of sustainable land development in FLC</td></tr>
<tr><td>Outcome 3.1: Increased awareness and appreciation of the ecosystem services of the Fanga'uta Lagoon
[Output 3.1.1: Awareness programs conducted through the production and dissemination of awareness materials; lessons learned shared with the PICs through the regional program support project]</td><td>Number of project brochures, media releases, video documentary in local dialect, feature press article, and website produced, distributed and used in training and capacity building activities concerning the ecosystem services of the Fanga'uta Lagoon</td><td>No awareness and communication materials in existence
There is a need to involve stakeholder groups in all stages of FLC IEMP process; limited channels to educate people on benefits of improving FLC conditions.</td><td>Production of a series of selected awareness and communication materials, which have been disseminated in all relevant Agencies associated with the NECCC as well as in all lagoon villages and the nearby areas of Tongatapu</td><td>Project reports
Reports from project annual M&E activities
GEF TWs Tracking Tool reports
Technical documents and communication materials produced and disseminated</td><td>Technical information, knowledge and experiences available from Outcome 1 and Outcome 2</td></tr>
<tr><td colspan="6">Activities:
a) Consolidate the network of key stakeholders in assessing the production and distribution of FLC awareness materials
b) Commission stakeholder surveys and interviews to define needs and gaps
c) Design key substances created for the FLC awareness and communication purposes
d) Select and produce effective awareness and communication materials</td></tr>
</table>

Project Strategy	Objectively Verifiable Indicators			Sources of Verification	Risks and Assumptions
	Indicator	**Baseline**	**Target**		
e) Publish and disseminate IEM and FLC IEMP information and communication materials and share these with the regional Pacific R2R program support project f) Establish, update and improve web access g) Create public awareness and ecosystem services education campaigns h) Evaluate periodically the results and identify remaining needs and gaps					

SECTION III: PROJECT BUDGET, WORKPLAN AND TIMETABLE

Award ID:	00077082	**Project ID(s):**	00088096
Award Title:	Integrated Environmental Management of the Fanga'uta Lagoon Catchment		
Business Unit:	FJI10		
Project Title:	Integrated Environmental Management of the Fanga'uta Lagoon Catchment		
PIMS no.	5219		
Implementing Partner (Executing Agency)	Department of Environment, Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communications, Tonga		

Outcome	Imple-menting Agency	Fund ID	Donor	UNDP B/L	UNDP B/L Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 3.5 (USD)	Total (USD)	Note
I.1 Multi-stakeholder management of the Lagoon in place to guide Plan updating and implementation	MEECCDM MIC	62000	GEF	71300	Local Consultants	4,919	5,040	5,167	2,648	17,774	1
				71600	Travel	5,000	10,000	10,000	6,000	31,000	2
				72300	Material and Goods	1,000	1,000	1,000	1,000	4,000	3
				74200	Audiovisual & Printing	2,500	500	500	976	4,476	4
				74500	Miscellaneous	8,000	8,000	8,000	4,000	28,000	5
				75700	Training, workshop and conference	12,500	22,500	22,500	7,250	64,750	6
				SUBTOTAL GEF OUTCOME 1		**33,919**	**47,040**	**47,167**	**21,874**	**150,000**	
1.2 Completed participatory updating of the Fanga'uta Lagoon IEMP, adopted, endorsed and budgeted for	MEECCDM MIC	62000	GEF	71200	International Consultants	26,400	-	-	14,300	40,700	7
				71300	Local Consultants	37,076	14,161	11,050	7,272	69,559	8
				71600	Travel	7,500	-	-	3,000	10,500	9
				72100	Contractual Services - companies	60,000	30,000	-	10,000	100,000	10
				72300	Materials and Goods	600	600	600	600	2,400	11
				74200	Audiovisual & Printing	300	300	300	300	1,200	12
				74500	Miscellaneous	150	150	150	191	641	13

				SUBTOTAL GEF OUTCOME 2		**132,026**	**45,211**	**12,100**	**35,663**	**225,000**	
2.1 Improved conditions of critical lagoon habitats, productivity, water quality and fish production through implementation of priority interventions identified in the IEMP	MEECCDM MIC	62000	GEF	71200	International Consultants	-	33,200	20,000	20,000	73,200	14
				71300	Local Consultants	30,412	70,772	71,551	19,675	192,410	15
				71600	Travel	-	20,800	20,800	15,400	57,000	16
				72300	Materials and Goods	-	375,000	390,000	60,000	825,000	17
				72400	Communication and audio visual equipment	1,920	1,920	1,920	960	6,720	18
				75700	Training, workshop and conference	-	37,000	37,000	19,890	93,890	19
				SUBTOTAL GEF OUTCOME 3		**32,332**	**538,692**	**541,271**	**135,925**	**1,248,220**	
3.1 Increased awareness and appreciation of the ecosystem services of the Fanga'uta Lagoon	MEECCDM MIC	62000	GEF	71300	Local Consultants	3,300	3,300	3,300	3,300	13,200	20
				72100	Contractual Services - companies	2,500	2,500	12,500	12,500	30,000	21
				75700	Training, workshop and conference	-	3,400	3,400	-	6,800	22
				SUBTOTAL GEF OUTCOME 4		**5,800**	**9,200**	**19,200**	**15,800**	**50,000**	
Project management	MEECCDM MIC	62000	GEF	71300	Local Consultants	11,000	11,000	10,476	6,500	38,976	23
				72500	Supplies	1,500	900	900	480	3,780	24
				72200	Equipment and Furniture	30,000	-	-	-	30,000	25
				74500	Cost recovery charge	6,497	2,405	1,602	400	10,904	26
				SUBTOTAL for PMC		**48,997**	**14,305**	**12,978**	**7,380**	**83,660**	
					Project Total (GEF)	253,074	654,448	632,716	216,642	1,756,880	

Summary of funds

Summary of Funds					
Source	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Total**
GEF	253,074	654,448	632,716	216,642	**1,756,880**
Government (in-kind)	91,500	240,500	234,000	84,000	**650,000**
Non-Government Partners	825,000	2,035,000	1,980,000	660,000	**5,500,000**

UNDP (in-kind)	70,000	187,500	182,500	60,000	**500,000**
Total	1,239,574	3,117,448	3,029,216	1,020,642	8,406,880

Budget Notes:

1 Part of the costs (20%) of the Project Manager that is attributable for this outcome
2 Travel related to participation in international trainings related to R2R with participants from the Catchment Committee members
3 Supplies and other materials needed by the Committee
4 Cost of audiovisual equipment and photocopying
5 Meeting and other related costs of the Catchment Committee
6 Trainings for the Catchment Committee and the communities in integrated environmental management
7 Cost of international consultants: Policy Advisor; Marine Ecologist; Terminal Evaluator
8 Cost of local consultants: Legal Expert; Fisheries Expert; Socioeconomist; 30% of Project Manager's time
9 Travel by international consultants; travel around the project area and nationally as needed
10 Specialized technical field research for EMP updating to be contracted out competitively
11 Supplies for EMP updating
12 Printing of reports
13 Miscellaneous expenses
14 Cost of International Coastal Zone Specialist
15 Cost of Project Manager (50% time) and other local consultants: project technical officer; forester; socioeconomist (valuation expert); ecotourism specialist; planning specialist; policy/legal expert; training specialist
16 Travel of international consultant, local consultants and PMU staff
17 Costs of all inputs related to mangrove restoration, sustainable land management, regulation of domestic pollution through composting toilet trials, seaweed farming trials, small motorized boat, among others
18 Utilities, including internet connection, telephone bills, etc.
19 Training for communities; community consultations; monitoring and evaluation of water quality and other indicators
20 Local consultants to prepare awareness materials
21 Cost of awareness materials subcontracted to local firms
22 Specialized training of awareness campaigns for various stakeholders
23 Salaries of finance/admin assistant and other PMU staff
24 Various office supplies
25 Purchase of a project vehicle (four-wheel drive pick-up)
26 Direct Project Service costs (DPS): Estimated costs of DPS requested by the implementing partners to UNDP for executing services as indicated in TBWP for recruitment of consultants and procuring equipments. In accordance with GEF Council requirements, the costs of these services will be part of the executing entity's Project Management Cost allocation identified in the project budget. DPS costs would be charged at the end of each year based on the UNDP Universal Pricelist (UPL) or the actual corresponding service cost. The amounts here are estimations based on the services indicated, however as part of annual project operational planning the DPS to be requested during the calendar year would be defined and the amount included in the yearly project management budgets and would be charged based on actual services provided at the end of that year.

Work Plan and Timetable (GanttChart) for the GEF MSP Fanga'uta Lagoon Catchment IEM

ID	Activity	Predecessors	Duration (week)	Year 1 (2014)		Year 2 (2015)				Year 3 (2016)				Year 4 (2017)			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1.1.1 a)	Establish a Project Management Unit (PMU)	--	5.3	X													
b)	Review of FLCMC composition, mandates and functions	Output 1.1.1 a)	5.3	X													
c)	Establish project advisory (or expert) groups or sub-steering committees	Output 1.1.1 b	3	X													
d)	Assess and service national and local training needs	Output 1.1.1 a)	11.8	X	X												
e)	Develop training courses and materials on Integrated Environmental Management (IEM); Conduct trainings	Output 1.1.1 a)	24.3		X	X	X	X	X								
f)	Formulate a draft statutory mandate of a 'Tonga Interagency Council on FLC'	Output 1.1.1 a), b) and c)	124.2							X	X	X	X	X	X	X	X
Output 1.1.2 a)	Consolidate identification of key FLC stakeholders	Output 1.1.1 a)	10		X												
b)	Initiate the consultative process in FLC	Output 1.1.1 a)	10		X	X											
c)	Develop a draft strategy for community action, approaches and functions	Output 1.1.1 a)	15.3			X	X										
d)	Sponsor and organize bi-annual lagoon and catchment NGO and stakeholders forums	Output 1.1.2 a), b), c)	128.3		X		X		X		X		X		X		X
e)	Undertaken demonstrations (or mini-projects) in FLC areas	Output 1.1.2 d)	129.2		X	X	X	X	X	X	X	X	X	X	X		
f)	Establish a FLC community-based research and knowledge management center	Output 1.1.2 d)	103.3						X	X	X	X	X	X	X	X	
Output 1.2.1 a)	Conduct a detailed review on the existing EMP FLS, update data, and identify information gaps	Output 1.1.1 a)	6.5	X													

ID	Activity	Predecessors	Duration (week)	Year 1 (2014)		Year 2 (2015)				Year 3 (2016)				Year 4 (2017)			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
b)	Consolidate the network of FLC environmental and socio-economic experts	Output 1.1.1 a)	9.2	X	X												
c)	Link the FLC management initiative to national development planning and programs and the activities of national and local NGOs as well as the private sector	Output 1.1.1 b) and d)	145.8		X	X	X	X	X	X	X	X	X	X	X	X	
d)	Evaluate current national policy, legal, institutional and human resource arrangements	Output 1.1.1 a)	9.2	X	X												
e)	Formulate national and local policy initiatives to facilitate FLC coordination and joint planning	Output 1.1.2 a), b), e)	45		X	X	X										
f)	Compile demographic framework for FLC from published sources	Output 1.1.1 a)	9.2	X	X												
g)	Commission socio-economic surveys in FLC areas	Output 1.1.2 a)	11.8		X	X											
h)	Establish area-wide patterns of demand; assess opportunity costs of ecosystem services across FLC areas	Output 1.1.1 a); 1.2.1 a)	11.8		X	X											
i)	Produce working socio-economic framework to integrate demographic and demand characteristics	Output 1.2.1 h)	9.5			X	X										
j)	Identify environmental hot spots and define environmental system limits and parameters	Output 1.2.1 j)	5.2				X	X									
k)	Convene expert group meetings on FLC environmental policy, legislation and management and publish the results	Output 1.1.1 c)	144.2		X	X	X	X	X	X	X	X	X	X	X		
l)	Draft a detailed FLC IEMP setting strategic functional priorities and fostering multiple uses	Output 1.1.2 a); 2.1	10.5							X	X						
m)	Present the final draft of FLC IEMP to local and national fora; dissemination of draft FLC IEMP to wider audiences	Output 1.2.1 l); 1.2.2	10.5								X	X					

ID	Activity	Predecessors	Duration (week)	Year 1 (2014)		Year 2 (2015)				Year 3 (2016)				Year 4 (2017)			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1.2.2 a)	Prepare and negotiate an updated EMP FLS (FLC IEMP) on the basis of FLC community and stakeholder consultation	Output 1.1.2 c)	12.2									X	X				
b)	Clearly delineate responsibilities in implementation of the FLC IEMP across government and other stakeholders	Output 1.2.1 d), e)	6									X					
c)	Solicit commitments from the government (national and local levels)	Output 1.2.2 a), b)	13									X	X				
d)	Develop guidelines on implementing the FLC IEMP (an updated EMP FLS)	Output 1.2.2 a)	12.2									X	X				
e)	Organize biannual capacity building activities for development policy makers and the wider public on FLC IEMP mainstreaming	Output 1.1.1 a)	121.7				X	X	X	X	X	X	X	X	X	X	
f)	Confirm government's commitments	Output 1.2.2 c)	32.3										X	X	X		
g)	Major agency-donor conference to discuss the final draft of the FLC IEMP and solicit support for implementation	Output 1.2.2 a), b)	6										X	X			
h)	Consensus on timetable for FLC IEMP implementation	Output 1.2.2 d)	16										X	X			
i)	Confirm donors' commitments	Output 1.2.2 g)	26.8											X	X	X	
j)	Present the Final Draft FLC IEMP to the FLCMC for adoption	Output 1.2.1 m); 1.2.2 h)	5.2												X	X	
k)	Prepare draft FLC management agreements and protocols for consideration by the FLCMC and concerned departments/ministries	Output 1.2.1 m); 1.2.2 h)	5.2											X	X		
Output 1.2.3 a)	Engage concerned government ministries and statutory authorities in identifying related issues and priorities	Output 1.1.2 a)	16			X	X										

ID	Activity	Predecessors	Duration (week)	Year 1 (2014)		Year 2 (2015)				Year 3 (2016)				Year 4 (2017)			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
b)	Develop monitoring and evaluation procedures; planning for implementation	Output 1.1.2 a); 1.2.2 a), b)	8.3				X										
c)	Confirm commitments to schedule and allocate resources for timely monitoring and assessment of the status of the Fanga'uta Lagoon and catchment areas	Output 1.2.3 a)	17				X	X									
d)	Identify key monitoring indicators and locations	Output 1.2.3 b)	7				X	X									
e)	Implement community-based activities to conduct regular monitoring of the status of the Fanga'uta Lagoon and catchment areas	Output 1.2.3 b)	121.7				X	X	X	X	X	X	X	X	X		
f)	Produce annual reports on FLC IEMP implementation and progress; communicate M&E results through the FLCMC and project-related meetings	Output 1.2.3 b), e)	15.3						X	X			X	X			X
Output 2.1.1 a)	Develop criteria and indicators for sustainable management of mangrove resources and ecosystem services in FL	Output 1.1.1 a); 1.1.2 c)	6.3		X	X											
b)	Develop monitoring and evaluation procedures	Output 2.1.1 a)	6.3			X	X										
c)	Identify key mangrove conservation hot spots and necessary actions to rehabilitate and maintain conditions	Output 2.1.1 a)	8.3			X	X										
d)	Produce a Manual on Mangrove Nursery Techniques	Output 1.1.1 a)	10		X	X											
e)	Organize biannual on-site trainings for ecological mangrove rehabilitation	Output 2.1.1 d)	118.3				X		X		X		X		X		X
f)	Sponsor and organize community-based mangrove restoration programs involving local youth and women in raising mangrove saplings and maintaining nursery	Output 2.1.1 e)	121.7				X	X	X	X	X	X	X	X	X	X	
g)	Evaluate the results and define limits of sustainable use in space and time	Output 2.1.1 f)	6.3						X				X				X

ID	Activity	Predecessors	Duration (week)	Year 1 (2014)		Year 2 (2015)				Year 3 (2016)				Year 4 (2017)			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 2.1.2 a)	Review of current status of supply of and demand for fisheries resources in the lagoon through participatory survey and assessment	Output 1.1.1 a); 1.1.2 c)	6.3		X	X											
b)	Review of existing legal frameworks that govern fisheries activities in the lagoon; consolidate expert opinions on sustainable fisheries management in FL	Output 1.1.1 a)	6.3		X	X											
c)	Organize technical workshops and consultative meetings to define and identify managed areas for fish conservation and sustainable utilization	Output 2.1.2 a)	48.7			X	X	X	X								
d)	Evaluate the results and define limits of sustainable use in space and time	Output 2.1.2 c)	6.3						X				X				X
Output 2.1.3 a)	Prepare a detailed report on the participatory FLC eco-tourism program strategy and implementation plan	Output 1.1.1 a); 1.1.2 c)	6.3		X	X											
b)	Identify and execute demonstration and pilot projects to promote eco-tourism in FLC	Output 2.1.3 a)	121.7			X	X	X	X	X	X	X	X				
c)	Organize and/or sponsor trainings, workshops, and awareness campaigns for engaging FLC communities in sustainable eco-tourism, focusing on female villagers and youth living in the FLC areas	Output 2.1.3 b)	51.3			X	X	X	X								
d)	Evaluate the results and define limits of sustainable eco-tourism business practices	Output 2.1.3 c)	6.3						X				X				X
Output 2.1.4 a)	Commission community surveys to identify areas and methods of tree planting along the lagoon's shores and watershed areas	Output 1.1.1 a); 1.1.2 c)	6.3		X	X											
b)	Organize an annual campaign to plant trees and raise public awareness and soil conservation	Output 2.1.4 a)	15				X				X				X		
c)	Conduct biannual trainings on sustainable	Output 2.1.4	118.3			X		X		X		X		X		X	

ID	Activity	Predecessors	Duration (week)	Year 1 (2014)		Year 2 (2015)				Year 3 (2016)				Year 4 (2017)			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	land management practices	a)															
d)	Evaluate the results and define limits of sustainable agricultural practices	Output 2.1.4 c)	6.3						X				X				X
Output 2.1.5 a)	Review the current situation on the nature and extent of agricultural chemical fertilizer/pesticide usage and urban wastewater discharge in the FLC areas	Output 1.1.1 a); 1.1.2 c)	6.3		X	X											
b)	Select a methodology for identifying the nature and extent of pollution discharged into the Fanga'uta Lagoon and scoping	Output 1.1.1 a)	6.3		X	X											
c)	Analyze historical water quality monitoring data relative to prevailing environmental conditions to identify links between off-site movement of pollution and factors	Output 2.1.5 a), b)	6.3			X	X										
d)	Identify appropriate technologies and systems for controlling pollution from domestic sources in FLC areas	Output 2.1.5 c)	6.3			X	X										
e)	Identify and execute demonstration and pilot projects to minimize impacts of domestic sources of pollution in target FLC villages	Output 2.1.5 a)	121.7			X	X	X	X	X	X	X	X	X	X		
f)	Organize on-site trainings and workshops on sanitation improvement and related technical knowledge targeting key FLC communities	Output 2.1.5 e)	11.8		X	X	X										
g)	Conduct a detailed review and evaluation of the use and compliance of existing legal and institutional instruments for control of water quality in the lagoon	Output 2.1.5 a)	6.3			X	X										
h)	Organize annual trainings for key concerned decision-makers and community leaders as well as other stakeholders on land-use zoning/planning	Output 1.1.1 a); 1.2.1 e)	11.8				X				X				X		
i)	Evaluate the results and define limits of sustainable land development in FLC	Output 2.1.5 e)	6.3						X				X				X

ID	Activity	Predecessors	Duration (week)	Year 1 (2014)		Year 2 (2015)				Year 3 (2016)				Year 4 (2017)			
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 3.1.1 a)	Consolidate the network of key stakeholders in assessing the production and distribution of FLC awareness materials	Output 1.1.2 b); 1.2.1 b)	6.3		X	X											
b)	Commission stakeholder surveys and interviews to define needs and gaps	Output 1.1.1 a)	11.8			X	X	X									
c)	Design key substances created for the FLC awareness and communication purposes	Output 3.1.1 a)	11.8			X	X	X									
d)	Select and produce effective awareness and communication materials	Output 3.1.1 c)	15.3		X	X	X	X									
e)	Publish and disseminate IEM and FLC IEMP information and communication materials	Output 3.1.1 d)	15.3					X	X								
f)	Establish, update and improve web access	Output 3.1.1 d)	15.3		X				X				X				
g)	Create public awareness and ecosystem services education campaigns	Output 3.1.1 d)	15.3					X	X	X	X						
h)	Evaluate periodically the results and identify remaining needs and gaps	Output 3.1.1 e), f), g)	6.3		X				X				X				X

SECTION IV: ADDITIONAL INFORMATION

PART I: OTHER AGREEMENTS

ENDORSEMENT AND CO-FINANCING LETTERS:

GOVERNMENT OF TONGA
MINISTRY OF LANDS, ENVIRONMENT, CLIMATE CHANGE & NATURAL RESOURCES
P.O. Box 5, Nuku'alofa, Tonga
General Office: +(676) 23 611 Fax: +(676) 23 216 CEO Direct: +(676) 23 210 E-mail: apalaki@ gmail.com

9 December 2013

Akiko Fujii
Deputy Resident Representative
Fiji Multi-Country Office
United Nations Development Program
Suva, Fiji

Subject: Endorsement for Medium Size Project, "Integrated Environmental Management of the Fanga'uta Lagoon Catchment (Tonga R2R Project)."

In my capacity as GEF Operational Focal Point for the Government of Tonga, I confirm that the above medium size project proposal is (a) in accordance with my government's national priorities and our commitment to the relevant global environmental conventions; and (b) was discussed with relevant stakeholders, including the global environmental convention focal points.

I am pleased to endorse the preparation of the above project proposal which will be led by the UNDP. If approved, the proposal will be implemented by the Ministry of Lands, Environment, Climate Change and Natural Resources.

The total financing[1] being requested for this Program is US$1,915,000 inclusive of GEF project grants and Agency fee. The fund requested for Tonga under the project is detailed in the table below with indication of the GEF Agency that will implement the project(s).

GEF Agency	Type of Trust Fund	Focal Area	Country	Project	PPG	Agency Fee	Total
UNDP	GEF TF	Biodiversity	Tonga	834,862	-	75,138	910,000
UNDP	GEF TF	Land Degradation	Tonga	211,009	-	18,991	230,000
UNDP	GEF TF	Climate Change	Tonga	550,459	-	49,541	600,000
UNDP	GEF TF	International Waters	Global (Tonga)	160,550	-	14,450	175,000
Total				1,756,880	-	158,120	1,915,000

I consent to the utilization of Tonga's allocations in GEF-5 as defined in the System for Transparent Allocation of Resources (STAR).

[1] *"total financing" refers to funding from the GEFTF, LDCF, and/or SCCF.*

The Government of Tonga also wishes to apply the STAR flexibility mechanism in order to maximize the use of GEF resource for this project, as the total country allocation is less than USD$7million.

Yours Sincerely,

.....

Mr. 'Asipeli PALAKI
CEO, Ministry of Lands, Environment, Climate Change & Natural Resources
GEF Operational Focal Point, Tonga.

CO-FINANCING COMMITMENT LETTER

GOVERNMENT OF TONGA
MINISTRY OF LANDS, ENVIRONMENT, CLIMATE CHANGE & NATURAL RESOURCES
P.O. Box 5, Nuku'alofa, Tonga
General Office: +(676) 23 611 Fax: +(676) 23 216 CEO Direct: +(676) 23 210 E-mail: apalaki@ gmail.com

Ms Akiko Fujii
Deputy Resident Representative
United Nations Development Programme
Fiji Multi-Country Office
Suva, Fiji

Dear Ms Fujii

This is to confirm our commitment to provide cofinancing for the project "Integrated Environmental Management of the Fanga'uta Lagoon Catchment" for the government of Tonga, for the period 2014-2018. The breakdown of cofinancing (in-kind) from the existing programs/projects at Ministry of Lands, Environment, Climate Change and Natural Resources are as follows:

Name of Program/Project	Donor Agency	Amount
Tonga Pilot Program on Climate Resilience	Climate Investment Funded and led by ADB	USD$1.5M
GIZ/Coping with Climate Change in the Pacific Island Region	Government of Germany through SPC	USD$1.5M
Marine and Coastal Biodiversity Management in the Pacific Island and Atolls (MACBIO)	Government of Germany through SPC	USD$300,000
Mangrove Ecosystems and Climate Change Adaptation and Livelihoods (MESCAL Phase 1) MESCAL Phase 2	Government of Germany through IUCN Government of Germany through IUCN	USD$350,000 USD$350,000
Nukualofa Urban Development Sectoral Project Phase 2	ADB and AusAID	USD$1.5M

Government of Tonga budgetary support	Government of Tonga	USD$650,000
		TOTAL: USD$6.15M

For most of the projects, the cofinancing amount indicated does not represent the entire project amount but only the portion that is relevant to the proposed Fanga'uta Lagoon MSP.

Yours sincerely,

.....
Mr. Asipeli Palaki
CEO, Ministry of Lands, Environment, Climate Change and Natural Resources
GEF OFP, Tonga.

Note: Please send by email to: akiko.fujii@undp.org and to jose.padilla@undp.org with a copy to milika.tuita@undp.org

United Nations Development Programme

Empowered lives.
Resilient nations.

12 December 2013

Letter No.: 094
File Ref.: PRO 300 CP/TONGA

Dear Ms Dinu,

Subject: Co-financing support to GEF/STAR project "Integrated Environmental Management of the Fanga'uta Lagoon Catchment" for the Government of Tonga, for the period 2014-2018.

This is to confirm the support of the UNDP Fiji Multi Country Office to the above mentioned project to be implemented by the Department of Environment and Climate Change in the Ministry of Lands, Environment, Climate Change and Natural Resources. We confirm US$500,000 as co-financing in kind through the UNDP project "Tonga Governance Strengthening Programme (TGSP)" to support the above mentioned GEF/STAR project. The co-financing amount indicated does not represent the entire project amount but only the portion that is relevant to the proposed GEF/STAR project especially for Component 1 involving provision of an enabling environment for governance.

We thank you for your continuous support.

Yours sincerely,

Asenaca Ravuvu
Officer-in-Charge

Ms Adriana Dinu
UNDP-GEF Executive Coordinator
New York
USA

c.c Mr Jose Padilla – UNDP/GEF Regional Technical Advisor, Bangkok

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PART II: TERMS OF REFERENCES

A) TERMS OF REFERENCE OF THE FANGA'UTA LAGOON AND CATCHMENT MANAGEMENT COMMITTEE (FLCMC)

Objective and Scope

The Fanga'uta Lagoon and Catchment Management Committee (FLCMC) shall be responsible for collaboratively delivering and overseeing the implementation of actions and strategies as contained within the Fanga'uta Lagoon Catchment Integrated Environmental Management Plan (FLC IEMP) in accordance with the Tongan Government policy and regulation. The FLCMC also has the objective of implementing additional lagoon and catchment management plans, and set objectives for the future. The key issues facing the Fanga'uta Lagoon Catchment relate to:

- Fisheries conservation and management, in particular rehabilitation of declining important fish species and commercial fish stocks, set the minimum harvest size, and impose export controls and closed seasons;
- Ecosystem management and habitat rehabilitation, in particular impacts of riparian settlements and developments, mangrove and coastal (seagrass beds and coral reefs) ecosystems, coastal erosion control and protection, coastal sanctuary and bleeding grounds, and conservation of aquatic and terrestrial ecosystems;
- Water cycle management, in particular stormwater discharge quality, volumes and velocities, sewerage overflows, water use and wastewater management, and environmental flows; and
- Land use management and planning, in particular impacts of new and existing development contaminated land and reclamation, and rehabilitation of degraded agricultural land.

Subject to an agreement consulted on its Terms of Reference during its first meeting with inputs from the Project Management Unit, the Committee shall also assist in:

- Ensuring that current community values are considered in the development of lagoon and catchment management planning;
- Promoting linkages and co-operation between the community, local and national Governments, and other key stakeholders in the development and implementation of the FLC environmental management studies and plans;
- Monitoring and assessing effectiveness of the FLC environmental management plan after its implementation;
- Identify the coastal and estuary health problem areas to be assessed and provide input into known hazard behaviour;
- In undertaking the Committee's duties, include sustainable climate change adaptation actions based upon widely accepted competent scientific opinion. In the implementation of this duty ensure consistency with the Tongan Government's Climate Change Policy;
- Support and promote public education and other community focused programs essential to the long-term viability of the FLC environmental management plans;
- Support, promote and liaise with relevant authorities in the development of lagoon and catchment management strategies;
- Advocate for mainstreaming biodiversity and ecosystem services into local development process and in relation to relevant government plans, strategies and legislation.

Membership

Membership of the FLC Management Committee shall comprise representatives from the Governments, communities, NGOs/CSOs, and the private sector as follows:

5) Government through the NECC: ten (10) seats
   a) Chair: Minister of Lands, Environment, Climate Change and Natural Resources
   b) CEO for Lands, Environment, Climate Change and Natural Resources
   c) Director of Health
   d) Director of Education and Training
   e) Director of Infrastructure
   f) CEO for Agriculture, Food, Forestry and Fisheries
   g) Secretary for Commerce, Tourism and Labour
   h) Secretary for Finance and National Planning
   i) Secretary for Foreign Affairs
   j) Solicitor General
6) Communities: five (5) seats
7) NGOs/CSOs (e.g., National Fisheries Council; one other NGO): two (2) seats
8) Private Sector: Tonga Chamber of Commerce: one (1) seat

Meetings

The Committee shall resolve its decisions on consensus for the benefit of all parties involved and make recommendations to the MEECCDMMIC for endorsement. Full Committee meetings are to be held quarterly or as required.

B) TERMS OF REFERENCE FOR PROJECT GOVERNANCE BODIES

Terms of References for Project Steering Committee and Project Management Unit

Project Steering Committee (PSC)

A specific responsibility of the Project Steering Committee (PSC) is to provide a decision making framework that is logical, robust and repeatable to govern project implementation (within the agreed project budget, workplan and timeline) and ensure that the project scope is aligned with the overall strategic plan (SRF). The PSC will also facilitate liaison with the GEF Implementing Agency (i.e., UNDP) regarding overall governance of the project, while assisting in ensuring the necessary level of cross-sectoral institutional arrangement, cooperation and participatory management, including the securing of specific information and resources necessary for project progress and success.

The Project Steering Committee shall be chaired by DECC/ MEECCDMMIC and consist of members designated by participating government agencies, national and local experts, key concerned authorities in the Fanga'uta Lagoon and catchment areas, and community representatives. UNDP will participate as ex-officio member of the PSC. The number and composition shall be established in such a way as to maximize efficiency and benefits to the project.

The Project Steering Committee shall:

- Provide over all policy direction to the project;
- Decide strategies for the implementation of the project;
- Constitute sub-committees/advisory groups viz technical, implementation, monitoring, etc. and formulate their Terms of Reference
- Review the work of all sub-committees/advisory groups as well as the project management for conformity to overall policy framework of the government;

- Sort out administrative & financial matters relating to the project;
- Monitor the performance of the project in terms of quality and timelines;
- Review the impact of the project on the quality of service delivery;
- Take corrective/remedial actions in the case of delays in the implementation of the project activities;
- Ensure corrective/remedial actions in the case where the quality of the deliverables is not in accordance with specification

The Project Steering Committee shall be fully empowered to undertake all the action required for the successful implementation of the project. However, the Committee shall not take decisions on the use of funds, termination of contracts or any major changes to the project which will substantially change the agreed objectives of the project. Such decisions based on recommendations by the Project Steering Committee will be taken at tripartite review meetings with UNDP, the Executing Agency and the Project Manager when applicable.

The Committee shall meet regularly every 6 months or as deem necessary by the majority of the members. Secretarial/Logistic support to the PSC will be provided by the Project Management Unit (PMU).

Project Management Unit (PMU)

The Project Management Unit (PMU) will be established at the project site and guided by the decisions of PSC to implement project outputs through the following tasks:

- Be in correspondence with relevant project stakeholders and partners;
- Execute project activities, including day-to-day project operation, financial management and reporting;
- Coordinate the overall team resource requirements and utilization; and
- Organization of PSC meetings as well as other project-related meetings/conferences.

It is anticipated that experts from key concerned government agencies at local level will join the PMU either as project staff or project partners. It is expected that DECC/ MEECCDMMIC and/or affiliate agency/organization in charge of the management of the Fanga'uta Lagoon and catchment areas will support the implementation of the project not only by providing an office space and administrative supports, but also by strengthening collaboration and partnership among all stakeholders through their leadership.

C) TERMS OF REFERENCE FOR PROJECT MANAGER AND OTHER MAJOR PROJECT STAFF

Terms of References for Project Manager and Key Project Staff

Project Manager (PM)

Reporting directly to the Project Director of the executing Agency and guided by the decisions of Project Steering Committee (PSC), the Project Manager (PM) will work in close coordination with UNDP and be responsible for ensuring that the project is implemented in accordance with the agreed project workplan, timeframe and budget to achieve the objectives outlined in the Project Document.

Duties and Responsibilities

1. Coordinate, manage and monitor the implementation of the project;
2. Prepare detailed workplan and budget to ensure activities meet the objectives of the project, in consultation with the Executing Agency (EA, i.e., DECC/ MEECCDMMIC);

3. Manage all activities of the project, within the agreed budget, to achieve the expected outputs of the project, in consultation with the EA;
4. Provide vision and leadership to the project team to accomplish project success by facilitating the development of approaches, options, and optimal solutions;
5. Prepare Terms of Reference for technical services, consultants, experts, and specifications of materials as required by the project, in consultation with the EA;
6. Manage consultants and their performance in consultation with the EA, and supervise project administrative staff;
7. Review and approve project deliverables and outputs as defined in the Project Document and based on project specifications;
8. Coordinate consultations with stakeholders under the guidance of the EA;
9. Organize consultation meetings and proceedings;
10. Coordinate and oversee the preparation of the outputs of the project;
11. Under the guidance of the EA, convene and coordinate meetings of the Project Steering Committee and provide necessary updates to the Committee; and
12. Prepare and submit quarterly progress and financial reports, terminal reports, relevant E&M reports as required by GEF and UNDP, as well as briefing reports as needed and as specified in the contractual arrangements.

Qualification and Experience

The Project Manager should have a Master's degree in management, administration, environmental management or related field with a minimum of 7 years management experience at a senior level. Knowledge and understanding of the GEF project; familiarity with political, socio-economic and environmental issues in Tonga; and, good leadership, coordination, communication and facilitation skills are essential.

Technical Officer

The Technical Officer will report directly to the Project Manager and will be responsible for coordinating all technical aspects of the project by working with the Project Manager, counterparts in various government agencies, local and international consultants.

Duties and Responsibilities

- Prepare/review reports on ecological conditions at the Fanga'uta Lagoon Protected Area and catchment areas, including maps, assessment of biological and ecosystem services, land and aquatic resource uses, water quality, and threats to biodiversity and ecosystem services;
- Establish a set of criteria for identification of potential areas for habitat rehabilitation, tree plantation, and other technical resolutions such as agroforestry and development of other activities in project implementation (e.g., macro-level zoning as a contribution towards land use planning);
- Provide technical inputs and participated in the upgrading of the Environmental Management Plan for Fanga'uta Lagoon System (EMP FLS) through an integrated approach;
- Meet regularly with the project team and key stakeholders to share updates on technical analysis and assessment and/or review draft plan and status, prepare meeting agendas and document and meeting summaries, distribute meeting documentation to attendees;
- Develop knowledge and information documentation/communications on relevant biodiversity and ecosystem services issues as needed for various stakeholder groups; and
- Participate in project M&E processes and contribute to completion of GEF-required reports and IW/BD/LD Tracking Tools as required.

Qualification and Experience

The Technical Officer should have a MSc degree in any technical fields related to FLC management, e.g., geography, coastal management, environmental sciences, or related disciplines with at least 3 years of experience in marine/coastal ecological conservation, ecosystem management or related fields. Knowledge and experience working in the Pacific Islands in protected areas management, environmental impact assessment, strong technical report writing, data acquisition and analysis skills are essential.

Project Finance and Administrative Assistant

Under the supervision of the Project Manager (PM), the Assistant will support the Project Management Unit (PMU) in the implementation of the project.

Specifically, the Assistant will:

- Provide general support and report to the PMU staff on a daily basis;
- Assist in the organization of and provide administrative support to meetings, notably for the Regional Project Steering Committee, Technical Advisory Meetings, the National Inter-sectoral Committees (where appropriate), Implementing Agency/Executing Agency briefing meetings, and onsite consultative meetings;
- Assist in the preparation of contracts and sub-contract requests, Letters of Agreement, including all supporting documentation, in accordance with government rules and regulations;
- Assist in the preparation of requests for transfers of project funds and the financial records for the project including contributing to quarterly financial reports;
- Assist in the preparation of internal monthly reports on achievement of activities, outputs and impacts of project for consolidation as needed for formal project reporting requirements;
- Assist with the external reporting of activities to the Implementing Agency (UNDP) and the GEF and to the Project Steering Committee and fulfill Implementing Agencies Administrative and Financial Reporting requirements;
- Assist with communications to and from the different bodies created under the Project;
- Organize and manage a comprehensive and robust hard copy and e-copy archive filing system for the project;
- Assist in the preparation of information for project communications, including website development, newsletters and other communications material as required; and
- Other work activities as may be assigned from time to time, including wider liaison with DECC's related programs/activities.

Qualification and Experience

The Project Officer should have a degree in administration/management with 5 years experience in demonstrated administrative functions. Fluency in English and proficiency in written and oral communication, computer literacy, the ability to operate standard office equipment and familiarity with principles of accounting and office practice are essential.