



PROJECT IDENTIFICATION FORM (PIF)
PROJECT TYPE: FULL-SIZE PROJECT
TYPE OF TRUST FUND: GEF TRUST FUND

PART I: PROJECT IDENTIFICATION

Project Title:	Integrated Land and Agro-ecosystem Management Systems for Tonga		
Country:	Kingdom of Tonga	GEF Project ID:	5578
GEF Agency:	FAO	GEF Agency Project ID:	625491
Other Executing Partners:	Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF); Ministry of Land Survey, Environment, Climate Change, and Natural Resources (MLECCNR)	Submission Date:	September 16, 2013
GEF Focal Areas:	BD, LD, SFM	Project Duration (months):	60 months
Name of parent program (if applicable):	Ridge-to-Reef Programme	Agency Fee (\$):	220,046
• For SFM/REDD+ <input checked="" type="checkbox"/>			

A. FOCAL AREA STRATEGY FRAMEWORK:

Focal Area Objectives	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-Financing (\$)
Biodiversity (BD-2) Mainstream biodiversity conservation and sustainable use into production landscapes, seascapes and sectors	GEFTF	155,715	340,000
Land Degradation (LD-1) Agriculture and Rangeland Systems: Maintain or improve flow of agro-ecosystem services sustaining the livelihoods of local communities	GEFTF	711,646	1,230,000
Land Degradation (LD-3) Integrated Landscapes: Reduce pressures on natural resources from competing land uses in the wider landscape	GEFTF	892,501	2,120,000
Sustainable Forest Management (SFM-1) Reduce pressures on forest resources and generate sustainable flows of forest ecosystem services	GEFTF	585,092	1,710,000
Total project costs		2,344,954	5,400,000

B. PROJECT FRAMEWORK

Project Objective: Strengthening the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
Component 1: Development of legal and policy frameworks to support integrated land and agro-ecosystem management	INV, TA	1. Policies and laws are informed by land use change assessment reports, and promote integrated land and agro-ecosystem management <i>Indicators:</i> -Periodic land use and land use change assessment reports	1.1. National system of land administration enhanced, operational, and able to monitor land use change over time 1.2 Assessment of policy and legal framework for integrated agro-ecosystem	GEFTF <i>BD-2</i> <i>LD-1</i> <i>LD-3</i>	420,000 <i>70,000</i> <i>150,000</i> <i>200,000</i>	880,000 <i>100,000</i> <i>100,000</i> <i>680,000</i>

		<i>presented to Parliament; -Revisions to policies and laws to include integrated land and ecosystem management</i>	management, with recommendations for changes in land use management and land tenure systems			
Component 2: Development and implementation of Integrated agro- ecosystem management systems in pilot areas	INV, TA	<p>2.1 Capacity of local communities strengthened to sustain integrated agro- ecosystem management plans in the long run</p> <p><i>Indicator:</i> <i>-Hectares under improved sustainable land management practices</i></p> <p>2.2 Integrated agro- ecosystem management systems implemented effectively in selected communities</p> <p><i>Indicators:</i> <i>- Number of piggery/rainwater harvesting/biogas systems operating at end of the project;</i> <i>- Amount of energy and fertilizer supplied to households in pilot sites compared to baseline and non-project sites</i></p>	<p>2.1.1 Integrated Community Development Plans developed for selected communities</p> <p>2.1.2 Training on good agricultural and integrated land management practices provided to households in selected communities</p> <p>2.2.1 Twelve integrated piggery/rainwater catchment/biogas systems installed and operational</p> <p>2.2.2 Training courses delivered to all 12 agro-ecosystem management pilot sites</p>	GEFTF <i>BD-2</i> <i>LD-1</i> <i>LD-3</i>	870,370 <i>78,300</i> <i>442,070</i> <i>350,000</i>	1,880,000 <i>240,000</i> <i>850,000</i> <i>790,000</i>
Component 3: Mainstreaming Sustainable Forest Management	TA	<p>3.1 Data on changes in forest cover taken into account in policy and development decisions</p> <p><i>Indicator:</i> <i>-Government plans and decisions reflect forest cover assessments</i></p> <p>3.2. Forest resources in pilot and other project sites sustainably managed</p> <p><i>Indicator:</i> <i>-Number of hectares of forest under sustainable management as compared to the baseline, with a target of 500 ha in pilot sites and 300 ha in additional areas</i></p>	<p>3.1.1 National forest cover monitoring system developed and operational</p> <p>3.2.1 Forest management plans developed and implemented for pilot sites, with a target of 500 ha</p> <p>3.2.2 Enhanced capacity of communities, local and national institutions in agro- forestry practices</p> <p>3.2.3 Regeneration of degraded forest landscapes in 300 ha in addition to pilot sites</p>	GEFTF <i>LD-3</i> <i>SFM-1</i>	857,230 <i>300,000</i> <i>557,230</i>	1,960,000 <i>650,000</i> <i>1,310,000</i>

Component 4: Dissemination of best practices and lessons learned, monitoring and evaluation	TA	4.1 Awareness raising and communications campaign implemented	4.1.1 Communications campaign designed, developed, and delivered in pilot sites and at national level	GEFTF	85,690	280,000
		<i>Indicators:</i> -Number of guides on best practices and lessons learned; 4.2 Project implementation based on results based management and application of project findings and lessons learned in future operations facilitated	4.1.2 Project-related "Best Practices" and "Lessons Learned" published	<i>LD-1</i>	85,690	280,000
			4.2.1 Project monitoring system operating providing systematic information on progress in meeting project outcome and output targets			
			4.2.2 Midterm and final evaluation conducted			
Sub-Total					2,233,290	5,000,000
Project management Cost (PMC) [BD: 7,415; LD: 76,387; SFM: 27,862]					111,664	400,000
Total project costs⁴					2,344,954	5,400,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
Government	MAFFF	Cash	2,000,000
Government	MLECCNR	In-kind	750,000
Government	Ministry of Internal Affairs	In-kind	250,000
Multilateral Donor	FAO	In-kind	500,000
		Cash	300,000
Multilateral Donor	IFAD (TRIP)	Cash	300,000
Bilateral donor	US Aid (Climate change adaptation project)	Cash	200,000
Bilateral donor	ADB (SPCR Component 3)	Cash	200,000
Bilateral donor	ACIAR (Integrated crop management project)	Cash	600,000
Bilateral donor	China (Biogas)	In-kind	100,000
Regional Organization	SPREP	In-kind	200,000
Total Co-financing			5,400,000

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY FOCAL AREAS

GEF Agency	Type of Trust Funds	Focal Area	Country Name/ Global	Grant Amount (\$) (a)	Agency Fee (\$) (b) ²	Total (\$) c=a+b
FAO	GEFTF	Biodiversity	Tonga	155,715	14,015	169,730
FAO	GEFTF	Land Degradation	Tonga	1,604,147	144,373	1,748,520
FAO	GEFTF	SFM	Tonga	585,092	52,658	637,750
Total Grant Resources				2,344,954	211,046	2,556,000

E. PROJECT PREPARATION GRANT (PPG)

	Amount Requested (\$)	Agency Fee for PPG (\$)
• (Upto) \$100k for projects up to & including \$ 3 million	100,000	9,000

PPG AMOUNT REQUESTED BY AGENCY, FOCAL AREAS AND COUNTRY

Type of Trust Funds	GEF Agency	Focal Area	Country Name	PPG (\$) (a)	Agency Fee (\$) (b)	Total (\$) c=a+b
GEFTF	FAO	Biodiversity	Tonga	19,000	1,710	20,710
GEFTF	FAO	Land Degradation	Tonga	56,000	5,040	61,040
GEFTF	FAO	SFM	Tonga	25,000	2,250	27,250
Total Grant Resources				100,000	9,000	109,000

PART II: PROJECT JUSTIFICATION

A. PROJECT OVERVIEW

A.1. Project description

Global environmental problems

The Kingdom of Tonga comprises 170 islands of volcanic and coral origin spread over a sea area of 360,000 km². There are four main islands groups: Tongatapu and 'Eua, Vava'u, Ha'apai and the remote Niuaus. Tonga has a population of 103,036 persons (preliminary 2011 Population Census figure) living on 36 islands.. The total land area is 747 km² aggregated into four major groups of Tongatapu and 'Eua (370 km²), Ha'apai (119 km²), Vava'u (143 km²) and the two Niuaus (71 km²). The largest of these is Tongatapu on which Nuku'alofa the capital is located, and where about 68 percent of the total population resides. The soil in Tonga is a mixture of weathered coral and layers of volcanic ash which makes the soil very fertile and highly productive. The soil is suitable to variety of crops and vegetables as well as pastoral farming.

Biodiversity. Tonga's unique biodiversity is related to its own geological formation, geographical location, landmass and climatic conditions. The island group is remotely positioned in the Pacific Ocean and far from any continental landmass. As a result, there is limited exchange and its flora and fauna is limited in its diversity. The species diversity is affected by the isolation of the islands by a large amount of water which has encouraged endemism and genetic erosion. This is evident in the forest of the volcanic islands (such as Kao and Tofua) which are flourishing in abundance but with low diversity.

According to Tonga's National Biodiversity Strategy and Action Plan (NBSAP, 2012), the country supports a total of 2,264 species of fauna and flora, but only 357 species have been assessed. Out of the species assessed, six were found to be endemic. Tonga supports 581 species of plants and is a home for 45 birds (including the endemic Tongan whistler, *Pachycephala jacquinoti*). Of particular interest within the bird family is the Niuafo'ou megapode (*Megapodius pritchardii*), which is restricted to the island of Niuafo'ou where it buries its eggs in the warm sands near volcanic ducts. All other species of megapode in Polynesia have been extirpated, and the nearest extant species is in Vanuatu, 1,600 km west. The island group is also home to 23 mammals, 1139 marine fish, and 3 freshwater fish. The population of reptiles in Tonga consists of 16 known species. One assessed reptile has been declared as extinct on the IUCN 2008 Red List - the Tonga Ground Skink, *Tachygia microlepis*. About 80% of the plant species, 65% of reptiles and less than 5% of birds and mammals are threatened. Additionally, about 457 species of invertebrates have been described of which about 15% are threatened.

Land use. Data on land use in Tonga is very restricted, with the two latest efforts on estimating the area under each type of land use carried out during the preparation of the NBSAP (2006) and in 2009 for the preparation of Draft National Forest Policy in 2009. Land use in Tonga is divided into five main categories: (i) woodlands, (ii) plantations, (iii) coconut land (including grassland, shrubland, and cropland), (iv) mangroves and wetlands (saline and estuarine), and (v) other land uses. Table 1 below describes land use in hectares by each type during 2006 and 2009.

Type of Land use	Estimated area in 2006 (in ha)	Estimated area in 2009 (in ha)
Woodland	8,000	6,459
Plantations	800	501
Coconut	48,000	51,093
Mangroves and wetland	2,963	1,767
Other	9,337	8,866
Total	69,100	68,687
Source: Fourth Report, Review of Tonga NBSAP.		

Forest Ecosystems. The majority of the Tonga's natural forests are harbored by uninhabited volcanic islands and the island of 'Eua, southeast of Tongatapu Island. The rest of the forests are found as isolated patches on the inhabited islands of the Tonga Group, as result of agricultural and settlement activities. In 2006, it was estimated that about 8,000 ha (or 12% of the land in Tonga) were covered by woodland (forest). By 2009, woodland cover was estimated to have decreased to 9% or 6,460 (National Forest Policy 2009). This trend is translated to about 308 ha of forest area cleared per annum in the last 5 years. While there is consensus that Tonga's remaining natural forest is diminishing, it is doing so at a slower pace than before. Approximately (60) plant species that were identified and declared endangered under the NBSAP 2006 and were the centre of conservation efforts up to 2009.

The forestry sector currently employs about 200 people in nurseries, plantation management and sawmilling operations. About 900 m³ of plantation logs and 500 m³ of coconut logs are milled each year. Most production is consumed domestically but some is exported. The export value of wood carvings from indigenous forest tree species and trees on farms is unknown but likely to be significant. Sawmilling is estimated to constitute 10% of the manufacturing sector which in turn contributes about 5% to GDP.

The combined agriculture, forestry and fisheries sectors are recorded to account for about 28% of GDP. The real value of forestry is likely to be underestimated because it does not include contributions to other uses such as fuelwood, carving wood, medicinal & cultural, handicraft, flowers, food, and other non-wood forest products. More importantly, it does not place a value on the substantial environmental benefits of forests: conservation of biodiversity, maintenance of soil fertility, prevention of soil erosion, coastal protection, carbon seizure and improving water quality. Neither does it acknowledge the important role of forestry in supporting sustainable agriculture and building resilience to climate change.

Threats to biodiversity, forests and land resources

Biodiversity and forests: Of the biodiversity that is known and documented, the main threat is from the indiscriminate expansion of agriculture. The resulting impacts are loss of habitats for native fauna, extinction of rare flora species and the undermining of essential ecosystem functions and services including hydrological cycle, microclimate conditioning, and the loss of forest wood and non-wood products. Degraded and disturbed ecosystems provide conditions conducive to the spread of invasive weed and fauna species. The loss of natural habitats also increases the vulnerability to genetic erosion as species are restricted in their natural dispersal due to forest isolation. The main threat of agro-deforestation is perceived as rooted in the absence of an integrated and holistic land-use planning approach. The NBSAP recognizes the priority given to food security and export oriented crop

production but advocates for a balance to be struck to ensure ecological sustainability. Specific actions are acknowledged to protect essential ecosystems, ecological functions and services, and habitats for species of national and global significance.

Other threats are the over-harvesting of forests, mangroves and marine fin-fish resources and the degradation of the mangrove areas by reclamation and waste dumping. Tonga's NBSAP identifies the lack of, technical information available in-country for conservation planning, technical expertise and capacity, public awareness and appreciation of conservation goals in addition to having weak and ineffective legislation as threats to managing its native biodiversity.

Land Degradation: Although statistical information on the amount of land degradation resulting from factors such as agricultural mechanization, slash and burn, natural disasters and human settlement is not known, available statistics show that Tonga's land area under forest cover ranges from 4.4% to 11.6% depending on several estimations conducted. Population growth, coupled with urban migration especially on the island of Tongatapu is increasing the already growing demand for land for settlement purposes. Regulatory entitlements can no longer be fulfilled pushing families to put pressure on coastal areas and mangrove swamps. If this rate of degradation continues unabated, the damage to natural ecosystems could seriously affect the government's vision for a 'high quality of life for the people of the Kingdom'.

More than 70% of households own pigs that are not confined full time; pigs play a valuable role in the many religious/traditional/national obligations of families. On the other hand, pigs are regarded by all including owners, as pests that destroy crops, health, aesthetic value of the country sides, thwarts tourism, and are the initial cause of serious soil erosion in townships and roadsides.

The anthropogenic root causes of these problems

Population pressure: The growth in urbanization, being the result of rural migration from both the outer islands and Tongatapu itself, has put high pressure on the land, in particular around the capital Nuku'alofa where almost 40% of the country's total population is concentrated. People are compelled to utilize limited land and natural resources in unsustainable ways. On both major and the sparsely populated outer islands, destructive land clearing methods, such as clear-cutting and burning, crop and tree seedling destruction by foraging pigs, and over-harvesting of coastal and marine resources contribute to land and resource degradation.

Unchecked agricultural expansion: Tonga experienced a 26% decrease in the total area of forest ecosystems and carbon sinks from 2006 to 2009. The woodland, plantation forests and mangrove forests all experienced a downward trend of 13%, 10% and 3%, respectively. The major daily threat facing the woodland forests is agricultural expansion, which is confirmed by the 6% (3,093 ha) increase in agricultural land, from 2006 level. The main cause of this is attributed to a lack of an integrated land and agricultural management system. The destruction of woodland, plantation forests and mangrove weakens any contribution that Tonga provides to international efforts to reduce global warming.

The main barriers that need to be overcome to address these problems

Barrier No. 1: Limited land and resource use planning. The Government of Tonga (GoT) has some experience with land use planning, but little experience with integrated land and resource use planning at a landscape, ecosystem, or island-scape, level. A national Spatial Planning and Management Act was approved in 2012, and the Planning and Urban Management Agency (PUMA) will oversee its implementation, with an initial focus on the peri-urban area of Nuku'alofa.

Although there are over 20 acts or other legislations currently in place, implementation and enforcement are separate issues. Capacity to enforce existing land and sectoral laws and regulations is weak, therefore many

developments and activities are not in line with existing plans and guidelines. FAO has been helping Tonga to review and update its forest policy for the sustainable management of forest resources and the important role that forests play in biodiversity and soil conservation, coastal protection, water management and climate change adaptation and mitigation. However, there are no overall land use or agriculture policies in Tonga and it is hoped that the development of a national forest policy will lay the foundation for developing these policies. Further, the land administration system is just beginning to be digitized, and there is a significant backlog of land lease applications.

Barrier No.2: Lack of data for monitoring and decision making. As evidenced during the development of both the NBSAP and the National Forest Policy, there is very little information available on forest cover. The data available is not comprehensive and based on estimates from several years before.

Barrier No. 3: Lack of technical and financial capacity: The GoT has a limited budget to provide anything beyond the basic services to its population, especially when considering the extremely high costs of travel and transport to the outer islands. As a result, most of the still insufficient government expenditure and effort is focused in major islands where large populations live. Very little in the way of support or governance systems to outer islands has been possible. Further, while many government departments have technical capacity, it is limited to a few individuals in most cases.

Barrier No. 4: Social and cultural norms and limited environmental awareness: Tongans, particularly those on the outer islands, believe that land and resources should be utilized, meaning that land set aside for protection is really seen as land available for use. Pigs are valued animals in Tonga and throughout the Pacific, and most Tongan family units keep pigs for special occasions and to meet social and cultural obligations to family and church. Pigs are allowed to roam free and forage for their own food. Though technically illegal, pigs often feed on crops, plants and young trees in and around the community, destroying food and income sources of neighbors, greatly degrading the environment and increasingly the rural population's vulnerability to natural and external economic shocks.

Additionally, at the community and household level, there is very limited knowledge on the use of integrated systems, particularly for rainwater catchment/piggery/biogas use. Similarly, there is very limited access to proven agro-forestry techniques and planting materials.

Baseline scenario and any associated baseline projects

Brief description of co-funded baseline project activities	Co-financing type and amount (US\$)	
Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF)	Cash	2,000,000
Ministry of Land Survey, Environment, Climate Change, and Natural Resources (MLECCNR)	In-kind	750,000
Ministry of Internal Affairs	In-kind	250,000
FAO	In-kind	500,000
	Cash	300,000
IFAD (Tonga Rural Innovation Project)	Cash	300,000
US Aid (Climate change adaptation project)	Cash	200,000
ACIAR (Integrated crop management project)	Cash	600,000
ADB Strategic Program for Climate Resilience (Component 3)	Cash	200,000
China (Biogas)	In-kind	100,000
SPREP	In-kind	200,000
Total		5,400,000

The table above gives a summary of the baseline activities that this project will build upon. The main activities (by area of intervention) are as follows:

Legal and regulatory framework for land and agro-ecosystem management: The Lands Department (MLECCNR) is working with FAO to customize FAO's System of Land Administration (SOLA) for use in Tonga. The focus of this first phase is to establish the foundational system and to develop the modules on leasing and mortgage procedures. Future plans, resources permitting, include the development of the module for application for government allotment of land (all men in Tonga are entitled to a residential (town) plot and a bush plot for kitchen gardens), and further customization to allow for monitoring of changes in land use over time. This work complements the activities of the Planning and Urban Management Agency (PUMA) who will oversee the implementation of the recently approved National Spatial Planning and Management Act of 2012. PUMA is in discussions with SIDA for support to build their capacity to track land tenure and land use changes.

Integrated agro-ecosystem management: Government units, such as Agriculture, Forestry, Livestock, Environment, Lands, etc, provide sectoral support to select communities as financial and technical resources allow, primarily through externally-funded projects. The Agriculture Extension Division of MAFFF provides planting materials and technical advice to farmers, but service delivery is hampered by inadequate funding for planting materials propagation and inadequate staffing levels. The first demonstration of biogas system in Tonga established in 2009 at the Ministry of Agriculture Research Farm under Chinese Technical assistance with, therefore, provides the following three advantages; i.e. (i) effective use of pigs waste to provide energy in the form of biogas, (ii) alleviate wastewater treatment cost and reduce pollution caused by organic substances, such as foul smell and flies, and (iii) produce by-product, the residues from the digestion process, which can be used as organic fertilizer to enrich the soil. In 2011, the project also established a pilot small scale biogas unit for 9 farm households to promoting the implementation of biogas system and reported to be functioning well. The estimated cost for installation of biogas system is about US\$5000 for 10 m³. The IFAD-funded TRIP project assisted 60 communities to develop priority community development plans, but can typically only assist in financing a small number of the community priorities identified. Without additional support and an integrated approach, support to rural communities will continue to be ad-hoc, sporadic, sectoral and uneven.

Sustainable Forest Management: The Forest Division of MAFFF manages a few nurseries in order to provide farmers and households with seedlings, and spearheads the National Tree Planting initiative which aims to plant 500,000 trees over three years. However, the Forest Extension services are quite weak, largely due to lack of financial support. The annual budget for the Forest Division is \$0.6 million, much of which goes to staff salaries and benefits, with little left over for extension work in the outer islands. The Forest Division has satellite imagery from 1980 for all islands and access to the GIS system at the Department of Lands and Survey, but currently lacks the resources to monitor changes in forest cover over time.

Raising awareness and enhancing capacity for land and agro-ecosystem management: While the importance of containing pigs in order to protect crops and seedlings is well known and understood by many Tongans, very little progress has been made to date in addressing this problem. This is partly due to the ad-hoc nature in which MAFFF and other departments have approached the issue, typically in a sectoral and disjointed manner.

Proposed alternative scenario, components and expected outcomes

The overall aim of the project is to build on the baseline activities above and to utilize GEF resources to focus on selected areas to demonstrate an integrated approach to agro-ecosystem planning and management and biodiversity conservation, consistent with the ridge-to-reef approach. The proposed project will focus technical assistance on the four major components: (i) Development of Legal and policy frameworks to support integrated land and agro-ecosystem management; (ii) Integrated agro-ecosystem management systems; (iii) Sustainable Forest Management; and (iv) Dissemination of best practices and lessons learned, monitoring and evaluation. Each Component will contribute to the R2R program objective: 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.

These components are summarised in more detailed below.

Component 1: Development of Legal and policy frameworks to support integrated land and agro-ecosystem management. This Component will address barrier no. 1 by enhancing the policy and legal environment to remove barriers and facilitate and encourage the adoption of integrated agro-ecosystem management systems that will reduce damage done by livestock to crops and forests, reduce vulnerability to drought, and reduce greenhouse gas emissions. Land tenure and administration is one of the major issues to be addressed by the project, as uncertain land tenure not only affects people's ability to sustain themselves, but also the ability of government and other stakeholders to ensure vital ecosystem goods and services are maintained. Activities would include assessments of policy and regulatory environment, the enhancement of the system of land administration (SOLA); and the business viability of the integrated agro-ecosystem management systems; and assessment of the policy and legislative framework to promote sustainable forest management. The assessments will help to identify and address impediments to scaling up the integrated land and agro-ecosystem management systems, resulting in changes in policy and legal frameworks being proposed to the Parliament for consideration. The improved SOLA will help mitigate the impacts of encroachment on fragile or marginal lands, often found in coastal areas and watersheds.

Component 2: Integrated agro-ecosystem management systems. This component will address barriers No. 2 and 4. It will focus on the establishment of agro-ecosystem management systems that can eliminate the problems associated with free-roaming pigs in participating villages, as well as provide a renewable energy source in the form of biogas produced from pig manure. The project will cover the four major island group (Tongatapu, Vava'u, Ha'apai, and 'Eua) but selection of the pilot site from each group have not been finalized yet at this stage. However, we agreed that this is very important considering the nature of the project and must be chosen carefully, considering the following criteria:

- small island community (15 - 30 households)
- selected communities have serious problems with roaming livestock, more vulnerable to soil and coastal erosion, loss of biodiversity, limited access to water and energy, and degraded forest landscapes
- areas where the integrated R2R approach can be applied
- leadership commitment to the project and regulations and to the special demands of pilot status
- community and key primary stakeholders must be committed with an abiding interest in the project that will last the duration of the pilot period
- geographic accessibility and relatively convenient place so travel costs and time can be minimized for the project staff
- communities with good track record

The project would initially focus on 4 pilot sites, and then replicate and scale up to other areas based on assessment of pilot experience. Activities will include extensive community consultations; awareness building and collaborative planning forums involving decision-makers, planners, public and private stakeholders and village members; building consensus on importance of agro-ecosystem management; refining technical specifications for, and establishing, the piggery/biogas/rainwater harvesting systems in pilot areas; establishment of cropping systems; recovery of previously damaged forest areas; and developing a data collection and monitoring system in pilot sites and non-pilot sites for comparison purposes. A range of capacity building activities will be undertaken under this component, including training on integrated agro-ecosystem management, establishing piggeries and biogas systems, crop planning and management.

Component 3: Sustainable Forest Management. This component will address barriers no. 2 and 3. It will focus on enhancing Tonga's capacity to monitor changes in forest resources over time, enhance protection of remaining natural forests both in existing forest reserves and those areas currently not under any form of formal protection, and restore degraded forest landscapes in pilot sites under Component 2 and in priority watersheds (Barriers No. 2 and 3). Activities will include ground-truthing of satellite imagery to determine actual forest cover (to be co-financed by Department of Forests); establishing a system for monitoring changes to forest cover over time; support forest protection and restoration in pilot sites under Component 2 of this project, and other areas as resources allow; strengthening the capacity of the Forestry Department to provide more and better planting material to interested

farmers and communities, particularly on outer islands; and providing capacity building to communities, local and national institutions on forest restoration techniques, agro-forestry techniques such as inter-cropping, and other topics as needed. Beyond the pilot sites under Component 2, priority will be given to protecting and/or restoring degraded forest landscapes in key watersheds, consistent with the R2R approach, to be identified during the project preparation phase.

Component 4: Dissemination of best practices and lessons learned, monitoring and evaluation. Promising practices and lessons learned from the pilot initiatives will be widely disseminated through the regional learning network being established by the R2R program to support replication and scaling up of successful interventions throughout the Pacific region. SMART indicators will be identified and an M&E system developed for monitoring project progress and impact. Integrated and simplified tracking tools will be developed and utilized under this multi-focal area project.

Incremental cost reasoning

BD/ LD/SFM baseline: Sectoral measures to remove destructive livestock from the environment and reduce destructive land-clearing practices at a household level will continue to make limited progress unless an integrated approach to agriculture, land, forests, livestock and the environment is developed and implemented at a community, or island-wide scale. Forest cover continues to decrease and become more fragmented due to increasing demands for agricultural and residential lands. Left unchecked and in absence of strategic planning, the introduction of non-native commercial agricultural and tree species may result in crowding out of native species.

GEF Alternative: Integrated agro-ecosystem management approaches, such as the integrated piggery/rainwater harvesting/biogas systems under Component 2 of the proposed project, have the potential to address a range of critical needs of households at a community, and even an island, scale. Especially in remote outer islands where (reliable) electrification does not exist, farmers use biogas for illumination besides cooking. The residue of the process, slurry, can be easily collected and used as a potent organic fertiliser to enhance agricultural productivity. On average, farmers keeping a minimum of six adult pigs can generate sufficient biogas to meet their daily basic cooking and lighting needs. Investment costs of quality biogas plants vary between USD 2000 and 4000, depending on plant size, location of construction and country. The primary impact of biogas plants on poverty alleviation is to reduce the economic and the financial costs expended on fuel for cooking and lighting, fertilisers and to improve food security through increased agricultural yields and production, reduced food crops and stock losses. They may benefit only indirectly, from greater availability of traditional fuels and employment opportunities. In addition to the improvement of the environment at household level, biogas plants help to reduce deforestation. By returning slurry to the fields, depletion of nutrients and organic matter in the soil is reduced and by that the pressure to expand the area of land to be cleared for agriculture. The communities are expected to commit to containing their pigs in common, or grouped, piggeries, in order to receive the benefits of biogas for cooking, organic fertilizer in form of bio-slurry from piggeries, rainwater collection, and technical support and improved planting materials.

LD/BD baseline: Land tenure is often insecure due to the backlog of the land administration system. While the first two modules of SOLA should be operational by the end of 2013, much more work is required to establish a robust, automated system that will provide i. land tenure security, not only for residential and agricultural land, but also for conservation and protected areas; and ii. the ability to track changes in land use over time.

GEF Alternative: The support for the enhancement of SOLA under Component 1 of the proposed project would enable the Lands Department to fast-track the further development of the system so that land and resource use planning is based on, and promotes, secure land tenure for residential, agricultural, commercial, and conservation uses alike. The incremental cost will primarily centered around 'add-on' activities that would have served as a phase 2 platform for SOLA. GoT and FAO will meet the baseline costs through Phase 1 which ends in 2014.

SFM Baseline: Forest cover continues to decrease and become more fragmented due to increasing demands for agricultural and residential lands. The Forest Division of MAFFF is currently unable to ground-truth existing satellite imagery to provide an accurate picture of current forest cover, much less have a system in place to track

changes to forest cover over time. Further, while the Forest Division maintains nurseries in Tongatapu and a few larger islands, they cannot currently meet the demand for quality, robust planting materials, nor provide the technical advice on agro-forestry to farmers through the existing extension services.

GEF Alternative: The support for the Forest Division under Component 3 of the proposed project would enable them to establish, in collaboration with the Lands Department and Planning and Urban Management Agency (PUMA), a system to ground-truth satellite imagery and monitor changes in forest cover over time. In addition, the capacity of the Forest Division to provide materials and advice to farmers and communities on outer islands would be enhanced through support for improvements in nurseries and extension services.

Expected global environmental benefits

Multiple environmental benefits will be obtained from the integrated agro-ecosystem management approach, including reduced destruction of agro-biodiversity that provide valuable sources of food and ecosystem services and habitat, particularly in coastal areas already vulnerable to saltwater inundation and erosion; the establishment of organic fertilizer as an alternative to the use of harmful pesticides to improve soil quality and fertility; an increase in rainwater harvesting capacity to reduce the communities' vulnerability to drought for adaptation to climate change and climate variability; and the regeneration of forest landscapes previously degraded by foraging pigs and land clearing as a conservation programme for preserving native biodiversity (including endemic species such as the Tongan whistler).

Land degradation in vulnerable island ecosystems will be reduced in project areas as a result of improved planning, integrated management and enforcement. An integrated approach, through the R2R programme, and related projects adds to better management of related natural resources. Forest ecosystems restored at these locations resulting in a 10 percent increase in forest cover (or 80 ha of reforestation).

The environmental benefits from increases in forest cover include biodiversity protection through improving connectivity between fragmented forest patches; sustaining flows of ecosystem services such as soil fertility and stability, water catchment, and shoreline protection; and carbon sequestration.¹ The creation of 'green corridors' will ultimately protect the natural connection of ecosystem pathways and habitats that are vital for preserving native flora and fauna. Additional benefits to biodiversity conservation obtained from integrated ridge-to-reef management of natural resources within the project's targeted watersheds.

The integrated piggery/biogas system would establish biogas as an alternative to fire wood for cooking and lighting in project areas. This would contribute to GHG emission reduction, a co-benefit to the environmental benefits mentioned above.

Innovativeness, sustainability and potential for scaling up

This project is innovative in the context of Tonga and the wider Pacific, because under the rubric of the Ridge-to-Reef approach, it will integrate multiple sectors into a cohesive planning and management system in Tonga, which has typically operated in a sectoral and ad-hoc manner. It will pilot a new, integrated approach to agro-ecosystem management at a community or island level by controlling livestock, producing biogas and organic fertilizer, developing and implementing cropping plans, and regenerating degraded forest landscapes.

¹ Calculation of carbon benefits: Tonga does not have complete information about forest stocking but the project targets to restore approximately 500 ha in the project sites and an additional 300 hectares throughout the country. Forest ecosystems restored at these locations are expected to result in a 10% increase in forest cover (or 80 ha of reforestation). Recent information from Fiji shows an average forest carbon stock of about 48 tC/ha (GIZ, 2011, Fiji National Forest Carbon Stock Assessment) and native forest restoration in Tonga is likely to achieve at least a similar level of carbon stock. Thus, if the forest restoration in these areas results in the creation of an additional 80 ha of fully stocked forest, then the carbon stock that will eventually be created would be $80 \times 48 = 3,840$ tC, or 14,054 tCO₂eq. The carbon sequestration benefits from this project will be measured and during the life of this project.

Local communities are a core part of each project activity to ensure sustainability in an environment where the enforcement of laws and regulations on outer islands is extremely difficult. Extensive consultations, livelihood-enhancing initiatives, training and outreach activities, and co-management arrangements are designed to provide communities, especially on outer islands, the knowledge, skills, and tools to manage their environments in a way that contributes to their community's resilience. Projects will be selected in places where communities demonstrate an interest to participate in project activities to ensure sustainability. A key indicator of success will be positive changes in knowledge, attitudes and actions by communities participating in project activities.

Due to the distances and costs associated with working in Tonga, the project will focus on a few pilot areas to test different approaches to improving environmental management and biodiversity conservation. The lessons learned from this project will be combined with lessons from other initiatives such as the ADB PPCR project on promoting ecosystem resilience and the IFAD TRIP project on community development planning, to provide a solid basis for scaling up integrated environmental management in additional islands as resources become available. Finally, the work carried out during this project may be replicable in other islands of Tonga, and even to other islands in the region having similar conditions.

A.2 Stakeholders.

A list of key stakeholders and their potential roles in the project are provided in the table below. A detailed stakeholder analysis and mapping would be conducted during project preparation to include consultations with local communities, national project preparation workshops (inception and terminal), and baseline socioeconomic surveys. Special attention would be given to youth, women, disabled citizens, and residents of outer islands.

Stakeholders	Roles
Ministry of Agriculture and Food, Forests, and Fisheries	Main implementation partner. Responsible for day-to-day execution, management, coordination, and monitoring of project activities.
Ministry of Land Survey, Environment, Climate Change, and Natural Resources	Lead executing agency for activities relating to SOLA under Component 3
Local communities	Main project beneficiaries
District and Town Officers and Councils	Project beneficiaries (from capacity building) and project partners in activities on outer islands
Civil Society (NGOs, churches)	Project beneficiaries (from capacity building) and project partners in implementing project activities
Other Government Ministries (eg. Internal Affairs, Tourism)	Project beneficiaries (from capacity building) and project partners in implementing project activities
Private Sector	Project partners in implementing activities, including those related to tourism and solid waste management
SPREP	Project partner in line with its mandate as a regional organization with advisory and technical supporting role to the Tongan national government

A.3 Risks

Risks	Rating	Mitigation Measures
Disruption due to natural disaster and Climate Change effects: Impacts from climate variability and change, particularly severe drought or saltwater intrusion of groundwater supplies in populated areas, have the potential to disrupt project activities as government human and financial resources could be re-directed to respond to the humanitarian situation. In addition, sea level	High	The environmental monitoring system included under Component 4, and close project supervision, will assist project management to track potential negative impacts to project areas, as well as to other areas that could impact on the project.

rise, storm surge, and variable rainfall patterns may cause communities to migrate to other areas, potentially disrupting community-led activities.		
Local Communities: Collaboration of local communities will be critical to achieving the objectives of the project, but these communities will need to meet their own needs before agreeing to devote time and resources to resource management and biodiversity conservation. It may be difficult to reach agreement with all members of communities on management and enforcement measures.	High	Extensive community consultations are built into every aspect of the project. Project sites will be selected, in large part, in places where communities demonstrate an interest and willingness to engage in project activities. Positive incentives for participation, such as provision of renewable energy source in the form of biogas, would be provided to local communities where possible.
Government capacity (human and financial): While GoT has experience implementing GEF-financed and other projects, overall human resource capacity is generally low, particularly in the outer islands where government presence is nearly non-existent. Government budgets are fairly low, which could present problems if already low budgets are reduced due to changes in national budget allocations.	Medium	Significant capacity-building activities, for government and stakeholders alike, are included in the project to address capacity gaps. Project management will closely monitor government budget allocations in order to flag and potential shortfalls as soon as possible, so that corrective measures can be taken as needed to ensure continued implementation of project activities.
Technology suitability and operation and maintenance by local communities: While the biogas/piggery system is being piloted in Tongatapu, the integrated, community-level system to be piloted under this project has not been tested as yet in Tongatapu or the outer islands.	Medium	Feasibility assessments will be conducted during project preparation and extensive consultations made with target communities. On-going training in operating and maintenance of the entire system would be provided during project implementation.

A.4 Coordination

The Ministry of Agriculture and Food, Forests and Fisheries (MAFFF) would house the Project Management Unit (PMU) and be responsible for overall project implementation. MAFFF would sign an MOU with Ministry of Lands, Environment, Climate Change and Natural Resources (MLECCNR) to govern the arrangements for enhancing the SOLA under Component 1. The Joint National Action Plan Task Force (JNAP) would serve as the Advisory Committee for the Project and assist in coordinating with other projects as they are being designed and implemented. A project Steering Committee consisting of participating government departments, complementary projects, and representatives of civil society will be established and maintained throughout project implementation.

The MAFFF, as the primary project implementing Ministry, will build on, and learn from, the completed GEF/UNDP project on Capacity Building for Sustainable Land Management (SLM). The PMU will also coordinate with existing and planned projects and initiatives through the JNAP and project steering committee to be established under the project, including those funded by FAO (SOLA), China Aid (Phase 3 of the Biogas initiative), IFAD (Tonga Rural Innovation Project), ADB (SPCR Ecosystem Resilience Project), SPC (Mapping of Agricultural Land Uses initiative), World Bank (Agriculture Sector Planning) and AusAid/UNDP (Pacific Risk Resilience Program), etc. These agencies will be approached during detailed project design to collaborate as co-financier and/or serve in the project steering committee. Further, the MAFFF will ensure close consultation and coordination with the proposed UNDP/GEF project being prepared concurrently to this project.

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 National strategies and plans or reports and assessments under the relevant conventions

Tonga has a number of government and multi-stakeholder bodies' coordinating activities on biodiversity, land degradation and climate change. These include the proposed Parliamentary Committee on Climate Change, the National Environment Coordinating Committee (NECC), various Project Steering Committees and Working Groups. The proposed project will work through and actively utilize these mechanisms to link to existing interventions.

Biodiversity: The Tonga National Biodiversity Strategic Action Plan (NBSAP) was launched in 2006 and the Fourth National Report to CBD was issued in 2010. The Fourth National Report stated a 17% achievement for the 18 national objectives mapped into the framework of CBD. However, there was potential for a 50% achievement if the following recommendations were addressed: (1) include biodiversity on both national and sector plans; (2) implement policies to encourage sectoral collaboration; and (3) improve (government) funding. The proposed project is consistent with recommendations 2 and 3 and it will build on the achievements stated in the Fourth National Report. The proposed project is also consistent with the following four of the eight Strategic Goals of the NBSAP: 1 Forest ecosystems and resources are sustainably managed; 4 Rich agro-biodiversity is protected, conserved and sustainably managed; 5 Local communities and civil society have pride in Tonga's natural heritage and are active advocates and participants in its protection and management; and 8 NBSAP is financed from resources generated from a diversified and reliable mix of local and external funding sources.

Sustainable Forest Management: The proposed project directly responds to the first Strategic Goal of the NBSAP: Forest ecosystems and resources are sustainably managed. The project is in line with priority mitigation measures outlined in the Second National Communication to the UNFCCC (2012) for the Land Use Change and Forestry Sector, specifically agroforestry and intercropping techniques, tree propagations, tree selections, sustainable forestry management, and improved forestry data collection and analysis.

Land Degradation: Land degradation has resulted in the loss of biodiversity and will reduce the resilience of the low-lying islands of Tonga to the adverse impacts of climate change and sea level rise. MLECC has been carrying out surveys of coastal biodiversity appropriate for coastal protection as part of the NBSAP implementation. The project component under the LD focal area is consistent with the Tonga Strategic Development Framework (2011 TSDF) outcome objective 7: cultural awareness, environmental sustainability, disaster risk management and climate change adaptation, integrated into all planning and implementation of programs, by establishing and adhering to appropriate procedures and consultation mechanisms. The Thematic Assessment Report for the United Nations Convention to Combat Desertification (2007) report identified land degradation as a serious environmental problem for Tonga. Land degradation in Tonga occurs in the form of increasing clearance of forest land for farming; wind and water caused soil erosion; overgrazing of roaming pigs; overuse of land resulting in low fertility, serious drought, and increasing mining of sand from coastal area. Damage from roaming pigs in protected areas is considered the most serious threat to biodiversity and land degradation.

B.2 GEF focal area strategies, eligibility criteria and priorities

Biodiversity: The project will undertake activities that result in outputs and outcomes that contribute to the achievement of the primary GEF Biodiversity Objective 2: *Mainstream biodiversity conservation and sustainable use into production landscapes, seascapes and sectors*. The project, in partnership with communities and other stakeholders, will ensure that biodiversity concerns are taken into account in the enhancement of the system of land administration under Component 1, the integrated agro-ecosystem management approaches under Component 2, , and the sustainable forestry management activities under Component 3.

Land Degradation: The project will contribute to achieving GEF objectives in the focal area of Land Degradation, specifically Objective 1: *Agriculture and Rangeland Systems: Maintain or improve flow of agro-ecosystem services sustaining the livelihoods of local communities*; and Objective 3: *Reduce pressures on natural resources from competing land uses in the wider landscape*. The integrated agro-ecosystem management approach promoted by the

project will effectively improve the flow of services to local communities by removing the destructive roaming pigs from the environment, by providing organic fertilizer to increase crop production and improve soil fertility, and by regenerating already degraded vegetation and forest landscapes. The project will provide communities with the knowledge, capacity, and tools to plan and manage their broader environment, whether at a community-, ecosystem-, or island-wide level, thereby maintaining a sustainable balance between livestock production, crop production, forest ecosystem services, and biodiversity conservation. Further, the project aims to reduce destructive land use changes and practices by improving the SOLA, promoting integrated approaches to, and building awareness and capacity for, land and resource planning and management.

Sustainable Forest Management: The project will contribute to meeting the Sustainable Forest Management Objective 1: *reduce pressures on forest resources and generate sustainable flows of forest ecosystem services*. The project aims to increase forest cover through improving the capacity of the Forest Division to provide technical support and planting materials to communities for the regeneration of degraded forest landscapes, and coastal area protection. These will be achieved through activities in Components 3 and 1, and closely linked to activities targeting Objective 5 of the Climate Change Focal Area, including providing alternative fuel sources to communities in the form of biogas; providing technical support and improved seedlings to communities and civil society to recover degraded forest landscapes; and ensuring that data on changes in forest cover inform decision-making processes at the island and national levels.

B.3 The GEF Agency's comparative advantage for implementing the project

As the GEF Agency for one of the two national Tonga R2R projects, FAO will bring its considerable expertise in integrated agro-ecosystem and agro-forestry management, livestock management, land use and land use change management, its System of Land Administration (SOLA) and sustainable forest management. FAO has a sub-Regional Office for the Pacific Islands (SAPA) with 6 multidisciplinary full-time staff, including forestry, fisheries, and agricultural specialists. SAPA currently manages a diverse portfolio of projects and therefore will be in a position to effectively manage this project. In addition, the project will be supported by a multi-disciplinary Project Task Force, comprising FAO technical staff based in Bangkok and Rome.

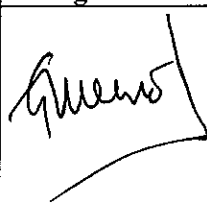
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT ON BEHALF OF THE GOVERNMENT:
(Please attach the Operational Focal Points endorsement letter(s) with this template. For SGP, use this OFF endorsement letter).

NAME	POSITION	MINISTRY	DATE (MM/DD/YYYY)
Mr 'Asipeli Palaki (Operational Focal Point) a_palaki@yahoo.com ceo@lands.gov.to	CEO, Ministry of Lands, Environment, Climate Change, and Natural Resources	Ministry of Lands, Environment and Climate Change Nuku'alofa, Kingdom of Tonga	04/05/2013

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date (MM/DD/YYYY)	Project Contact Person	Telephone	Email Address
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