



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Naoko Ishii
CEO and Chairperson

August 22, 2016

Dear Council Member,

The FAO as the Implementing Agency for the project entitled: **Tonga: R2R Integrated Land and Agro-ecosystem Management Systems under the Regional: R2R- Pacific Islands Ridge-to-Reef National Priorities â€“ Integrated Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods**, has submitted the attached proposed project document for CEO endorsement prior to final Agency approval of the project document in accordance with the FAO procedures.

The Secretariat has reviewed the project document. It is consistent with the project concept approved by the Council in March 2014 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the FAO satisfactorily details how Council's comments and those of the STAP have been addressed.

We have today posted the proposed project document on the GEF website at www.TheGEF.org for your information. We would welcome any comments you may wish to provide by September 20, 2016 before I endorse the project. You may send your comments to gcoordination@TheGEF.org.

If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Naoko Ishii
Chief Executive Officer and Chairperson

Attachment: GEFSEC Project Review Document
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee



REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

PART I: PROJECT INFORMATION

Project Title: Tonga Integrated Land and Agro-ecosystem Management Systems (ILAMS)			
Country(ies):	Tonga	GEF Project ID: ¹	5578
GEF Agency(ies):	FAO	GEF Agency Project ID:	625491
Other Executing Partner(s):	Ministry of Agriculture, Food, Fisheries, and Forests; Ministry of Lands, Survey, and Natural Resources; Ministry of Environment and Climate Change (MEIDECC)	Submission Date:	Feb 5, 2016
Resubmission Dates:	May 6, 2016 July 21, 2016		
GEF Focal Area (s):	BD, LD, SFM	Project Duration(Months)	48
Name of Parent Program (if applicable): <input checked="" type="checkbox"/> For SFM/REDD+ <input type="checkbox"/> For SGP <input type="checkbox"/> For PPP	“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”	Project Agency Fee (\$):	211,046

A. FOCAL AREA STRATEGY FRAMEWORK²

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (\$)	Co-financing (\$)
BD-2: Mainstream biodiversity conservation and sustainable use into production landscapes, seascapes and sectors	Outcome 2.2: Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks.	Output 2.1. Policies and regulatory frameworks (number) for production sectors. Output 2.2. National and sub-national land-use plans (number) that incorporate biodiversity and ecosystem services valuation.	GEFTF	155,715	476,119
LD-1: Agriculture and Rangeland Systems: Maintain or improve flow of agro-ecosystem services sustaining the livelihoods of local communities	Outcome 1.1: An enhanced enabling environment within the agricultural sector Outcome 1.2: Improved agricultural management Outcome 1.3: Sustained flow of services in agro-ecosystems	Output 1.1 National policies that guarantee smallholder and community tenure security Output 1.2 Types of Innovative SL/WM practices introduced at field level Output 1.3 Suitable SL/WM interventions to increase vegetative cover in agro-ecosystems Output 1.5 Information on SLM	GEFTF	711,646	2,175,950

¹ Project ID number will be assigned by GEFSEC.

² Refer to the Focal Area/LDCF/SCCF Results Framework when completing Table A.

		technologies and good practice guidelines disseminated			
LD-3: Integrated Landscapes: Reduce pressures on natural resources from competing land uses in the wider landscape	Outcome 3.1: Enhanced cross-sector enabling environment for integrated landscape management Outcome 3.2: Integrated landscape management practices adopted by local communities	Output 3.1 Integrated land management plans developed and implemented Output 3.2 INRM tools and methodologies developed and tested Output 3.4 Information on INRM technologies and good practice guidelines disseminated	GEFTF	892,501	2,728,937
SFM-1: Reduce pressures on forest resources and generate sustainable flows of forest ecosystem services	Outcome 1.1: Enhanced enabling environment within the forest sector and across sectors	Output 1.2: Forest area (hectares) under sustainable management, separated by forest type Output 1.3: Types of services generated through SFM	GEFTF	585,092	1,788,994
Total project costs				2,344,954	7,170,000

B. PROJECT FRAMEWORK

Project Objective: To strengthen 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	Grant Amount (\$)	Confirmed Co-financing (\$)
1: Improving the enabling environment for integrated land and agro-ecosystem management.	TA	<p>1.1: Increased acknowledgement and incorporation of integrated land and agro-ecosystem management principles in national policies, laws, and regulations</p> <ul style="list-style-type: none"> - At least 3 ILAM Policy Intention Papers cited in sectoral policies, strategies and plans. <p>1.2: Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide</p> <ul style="list-style-type: none"> - 4 ‘complete watershed’ areas, , with completed up to date cadastral maps used for GIS-based applications for land use planning and for monitoring land use changes over time. - Allotment map data capture and quality improvement work 100% completed. - By project end MLSNR staff have assumed all responsibility for data capture and input - MLSNR is actively accepting applications and new survey plan data 	<p>1.1.1: Policy intention papers to inform sectoral policy and planning processes</p> <p>1.1.2: National Land Use Policy document</p> <p>1.2.1: Enhanced National System of Land Administration, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure.</p>	GEFTF	515,364	1,575,792

		<p>digitally through the internet.</p> <p>1.3 Improved strategic planning of forest resources</p> <ul style="list-style-type: none"> - Central and local government bodies and civil society organizations have reflected the provisions of the Plan in their own operational plans - A fully functional Forest Monitoring System is in place and its data outputs are being used in planning by key entities of central and local Government and civil society organisations. 	<p>1.3.1: National Strategic Forestry Development Plan developed</p> <p>1.3.2: National Forest Monitoring system</p>			
2: Site-based capacities for evidence-based negotiation of land use planning, management and tenure rights	TA	<p>2.1: Capacities for evidence-based and negotiated formulation of resource management plans at landscape and village levels, clarification of farmers' tenure rights and obligations</p> <ul style="list-style-type: none"> - Multi-stakeholder mechanisms are active at least twice per year in target locations - All key stakeholder groups (commoners and nobles, men and women) participate actively in the mechanisms - 80% of participants in multi-stakeholder mechanisms consider that the mechanism contributes significantly to resolving issues that impede equitable and sustainable approaches to land management - Operational plan developed for the implementation of the 'Eua Watershed Management Plan over at least the project period, and corresponding activities implemented in accordance with the plan. - No new instances of clearance of forests in the 'Eua watershed for agriculture 	<p>2.1.1: Multi-stakeholder mechanisms for the negotiation of resource management and tenure</p> <p>2.1.2: Negotiated and evidence-based plans for land use and integrated agroecosystem management at landscape and village levels</p> <p>2.1.3: 'Eua Watershed Area Management Plan developed, and implemented</p>	GEF TF	277,921	849,779
3: Strengthening of capacities for the formulation and implementation of sustainable land management practices with an integrated R2R approach	INV/ TA	<p>3.1: Increased capacities in Government institutions and NGOs for identifying and supporting SLM practices</p> <ul style="list-style-type: none"> - 20 members of Government institutions and 28 members of NGOs have received training through the modules and show improved knowledge, attitudes and practices (KAP) as a result - 20 members of Government institutions and 28 members of NGOs report using the training manuals as 	<p>3.1.1: Training modules for extension agents</p> <p>3.1.2: Manuals for use by extension agents</p>	GEF TF	1,231,072	3,764,160

		<p>regular guides for their work.</p> <p>3.2: Increased capacities in local communities in the target localities to develop, apply and adapt SLM practices</p> <ul style="list-style-type: none"> - Integrated agroecosystem management practices are applied on 225 tax allotments (<i>'api tukuhau</i>) covering 750ha, including at least 30 <i>'api tukuhau</i> covering 100ha in each of the target localities - 75% reduction in the amounts of firewood collected from vulnerable forest areas - At least 50% increase in water storage capacity in whole area where piggeries and intercropping systems will be covered under each ILAMP. - No net reduction in water availability for domestic uses in pilot communities, despite the establishment of piggeries. - On average farmers in the pilot communities report a 75% reduction in the areas of crops damaged by roaming pigs. - 30 farmers in each target locality with 15% increases in crop yields over 100ha. - 225 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their farms - 14% reduction in the amounts of bottled gas used resulting from switch to biogas from piggeries, resulting in avoidance of emissions of 296 tCO2 e/yr - 100% of interviewees in villages where pig management practices have been modified report that there has been no reduction in their abilities to meet social and cultural obligations <p>3.3. Increased capacities for the formulation and implementation of forest restoration plans, and for supporting improved management of forests, mangroves, and trees outside forests:</p> <ul style="list-style-type: none"> - Forestry Division and communities concerned agree that the provisions of operational plans and SFMAs covering 	<p>3.2.1: Demonstration modules for integrated agroecosystem management systems</p> <p>3.2.2: Farmer field schools for participatory problem analysis and development of SLM practices</p> <p>3.2.3: Extension modules applied in target communities</p>		
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		<ul style="list-style-type: none"> - 150ha are being met - 80% of tree nurseries nationwide are able to meet at least 90% of their seed supply requirements - 80% of tree nurseries nationwide with long term funding needs ensured (from sources other than short term project-based support) - 100ha of agricultural land returned to forest use in the target localities 	<ul style="list-style-type: none"> management systems 3.3.3: Sustainable Forestry Management Agreements 3.3.4: Improved mechanisms for supply of tree seed and planting materials 3.3.5: Training modules on forest restoration and management, for Forestry Division staff and community members 		
4. Knowledge Generation and Dissemination and Monitoring and Evaluation	TA	<p>4.1 Project implementation based on results-based management and application of lessons learned and good practices in current and future interventions, facilitated</p> <ul style="list-style-type: none"> - Number of ILAMS Annual project progress reports presented at R2R regional meetings - Number of Technical or Policy reports published on MAFFF website and ECC Portal - Mid-term Evaluation and Final Evaluation reports published 	<p>4.1.1 Knowledge generated by the project shared within Tonga and the region</p> <p>4.1.2 Monitoring and Evaluation of project activities conducted and used for adaptive project management purposes</p>	GEF TF	208,933 638,840
			Subtotal	2,233,290	6,828,571
			Project management Cost (PMC)	111,664	341,429
			Total project costs	2,344,954	7,170,000

C. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME (\$)

Sources of Co-financing	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount (\$)
National Government	Ministry of Finance and National Planning	In-kind	500,000
National Government	Ministry of Finance and National Planning	Grant	2,840,000
Regional Organization	Secretariat of the Pacific Community	In-kind	750,000
NGO	Mainstreaming of Rural Development Innovation Tonga Trust (MORDI)	In-kind	980,000
NGO	Oxfam	In-kind	240,000
Bilateral agency	GIZ	Grant	150,000
GEF Agency	FAO	In kind	300,000
GEF Agency	FAO	Grant	1,100,000
National Academic Organization	Tupou College	In-kind	155,000
National Academic Organization	Hango Agricultural College	In-kind	155,000
Total Co-financing			7,170,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY

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

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount (\$)	Co-financing (\$)	Project Total (\$)
Local consultants	676,700	480,000	1,156,700
International consultants	376,500	770,000	1,146,500

G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT?

NA

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF

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

1. No major changes from the approved PIF.
2. One positive development since the PIF was approved is the development of the Tonga Agriculture Sector Plan (TASP) with support by IFAD, the World Bank and FAO. Tonga has been lacking an overall agricultural policy or strategic framework, and the development of the TASP, expected to be finalized by end of 2015, will provide a much-needed, over-arching framework for future agricultural development in Tonga, as well as a set of priority activities, including the institutional strengthening of MAFFF, that are expected to complement the ILAMS project.

A.2 GEF focal area and/or fund(s) strategies, eligibility criteria and priorities

3. No changes from the approved PIF.

A.3 The GEF Agency’s comparative advantage:

4. No changes from the approved PIF.

A.4 The baseline project and the problem it seeks to address:

5. No major changes to the threats analysis presented in the PIF apart from additional detail. The barrier analysis has been reformulated as follows:

PIF	CEO Endorsement
<ol style="list-style-type: none"> 1. Limited land and resource use planning 2. Lack of data for monitoring and decision making 3. Lack of technical and financial capacity 4. Social and cultural norms and limited environmental awareness 	<ol style="list-style-type: none"> 1. Regulatory and policy frameworks do not adequately support integrated, landscape-wide approaches to land use planning and management 2. Land use planning capacities and tenure conditions are unfavourable for sustainable land management 3. Inadequate capacities in Government and among land managers for the support and implementation of sustainable land management practices adapted to biophysical, socioeconomic and tenure conditions

A.5 Incremental / Additional cost reasoning:

6. Taking into account STAP and GEFSec comments, the structure and emphasis of outcomes and outputs has been modified to improve logical flow and the balance of emphasis on key elements. The most significant modifications are as follows:

- A new component (Component 2) has been added, with corresponding outputs, in order to increase the emphasis of the project on supporting capacities to evidence-based negotiation of land use planning, management and tenure rights. On the basis of analyses during the PPG phase, these are now recognized as being essential complements to the technical aspects of land use planning and tenure definition proposed under Component 1. This new emphasis will build upon prior experience of FAO worldwide in relation to participatory and negotiated territorial development (PNTD).
- Support to the National Strategic Forest Development Plan and Forest Monitoring System has now been included under Component 1, which covers all activities related to “enabling conditions”.
- Site-level activities focusing on capacity development for sustainable agricultural, agroforestry and forestry-related management systems are now all included under Component 3, rather than being separated between components as they were in the PIF. This change reflects better the integrated inter-sector vision that is central to the R2R approach.

7. The importance of supporting farm-level integrated systems, as emphasized in the PIF, is maintained; however additional emphasis has been added on linking these with village- and landscape-level perspectives, reflecting the R2R vision of the project, which will address landscape-wide flows of environmental threats and services.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

8. No major changes from the approved PIF.

9. Project risks have been identified and analysed during the full project preparation and mitigation measures have been incorporated into the project design (see Risk Matrix below). With the support from and under the supervision of FAO, the Project Management Committee (PMC) will be responsible for the day-to-day management of these risks and the effective implementation of mitigation measures. The project's M&E system will serve to monitor project outcomes and outputs indicators, project risks and mitigation measures. The PMC will also be responsible for monitoring the effectiveness of mitigation measures and adjusting mitigation strategies as needed, and identify and manage any eventual new risks not foreseen during project development, in dialogue with other project partners.

10. The six-monthly Project Progress Report is the main tool for project risk monitoring and management. The reports include a section on systematic follow-up of risks and mitigation actions identified in previous reporting periods. The PPRs also include a section for identification of eventual new risks or risks that still need attention, their rating and mitigation actions, as well as the responsible for monitoring those actions and the expected timeline. FAO will monitor the project risk management closely and follow up if needed by providing support for the adjustment and implementation of risk mitigation strategies. Reporting on risk monitoring and rating will also be part of the annual Project Implementation Review (PIR) prepared by FAO and submitted to the GEF Secretariat.

Risks	Rating	Mitigation Measures
Limited collaboration by local communities: Collaboration of local communities will be critical to achieving the objectives of the	High	Effective participation and consultation to ensure local community collaboration: extensive community consultations are built into every aspect of the project. Project sites have been selected, in large part, on the basis of

<p>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.</p>		<p>communities' expressions of interest and willingness to engage in project activities and the existence of relations of trust that have been built up through previous agency initiatives. Participation will further be ensured through the tangible socioeconomic benefits that will result from the project's actions in the short term, in the form of reductions in the damage to crops and lands caused by roaming pigs, and the provision of clean and accessible renewable energy in the form of biogas.</p>
<p>Limited human and financial capacities in national Government: while the Government of Tonga (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.</p>	Medium	<p>Strengthening of Government capacities, and reduction of community reliance on external capacities: 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. In addition, the project will seek to minimize communities' dependence on Government support by promoting their capacities for the participatory generation, adaptation and dissemination of SLM technologies, based wherever possible on traditional knowledge; and "low-tech" approaches to the production and supply of planting materials.</p>
<p>Unsuitability of technologies to local conditions: While the biogas/piggery system is already being piloted in Tongatapu, the integration of the system with whole farming system at the community-level to be piloted under this project has not been tested as yet in Tongatapu or the outer islands.</p>	Medium	<p>Development of capacities and governance mechanisms for the management and adaptation of technologies by local communities: the project will build on previous experiences with piggery systems in Tonga and community-based biogas systems in other countries, which have shown a high level of uptake and sustainability. On-going training in operating and maintenance of the entire system would be provided during project implementation. In addition, this training will focus on developing capacities among community members to troubleshoot technical, social or other problems that may arise in the future; while the community-based governance mechanisms to be supported by the project will facilitate the resolution of any stakeholder conflicts that may arise regarding, for example, roles and responsibilities for the maintenance of the systems, or the equity of the distribution of their benefits.</p>
<p>Climate change: climate change will pose a risk to the achievement of the project's objective as it may result in the climatic coping limits of the proposed production systems being exceeded (due to increases in temperature, rainfall variability and storm damage); land loss and degradation due to sea level rise, saltwater intrusion and salt spray impacts may also exacerbate productive pressures, and associated degradation, on the remaining land.</p>		<p>Development of capacities for innovation and adaptation to climate change: The project's approach will mitigate these risks by promoting capacities among extension agents and among community members to innovate and adapt the resource management systems they promote or apply, through the use of participatory, adaptive approaches to analysis, learning and technology generation such as farmer field schools. The project's support to negotiated approaches to addressing land use planning and land tenure issues will further enable communities to adapt to CC-related changes in biophysical and demographic conditions.</p>

A.7 Coordination with other relevant GEF financed initiatives

11. No major changes from the approved PIF. Addition detail has been provided on how the project will contribute to the overall GEF-financed Ridge-to-Reef (R2R) Regional Program and how it will complement the parallel UNDP R2R project on Integrated Environmental Management of the Fanga'uta Lagoon Catchment.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1. Describe how the stakeholders will be engaged in project implementation:

12. A list of key stakeholders and their potential roles in the project are provided in the table below. 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 Lands, Survey, and Natural Resources	Lead executing agency for activities relating to SOLA under Component 1
Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC)	Lead executing agency for activities relating to mangrove rehabilitation 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

13. One of the key lessons learned from previous community-level interventions in Tonga is the need to build consensus and commitment within participating communities. In addition to being essential for promoting negotiation and sustainability as key elements of land planning and management decisions, this participatory approach will help to ensure buy-in and ownership of the project itself by community members, which is crucial to their adoption of the proposed integrated agro-ecosystem management systems. This will require participatory meetings, workshops, training and awareness raising, including spatial planning at community/household/group level and community agreements on objectives and roles and responsibilities in the implementation of the project. Use wherever possible of existing mechanisms for organization, representation and dialogue such as Village Agriculture Committees (VAC) and community meetings (fonos).

14. Real and effective stakeholder participation will be particularly central to the project's approach under Component 2. Under Output 2.1.1, the project will seek to maximize the engagement of local stakeholders in processes of land use planning and resolution of tenure issues, by facilitating multi-stakeholder negotiation of resource management and tenure arrangements using the approach of participatory and negotiated territorial development (PNTD). This will involve supporting community members in carrying out initial diagnostics of their interests and visions regarding the management of their territory, and commencing dialogue; initial discussion of proposals for the management of the territory; and facilitating negotiation between the actors with the aim of, wherever possible, achieving consensus-based agreements. These actions will build on progress made to date with the building of relations of trust with local communities, with support from IFAD and other agencies.

15. A similarly participatory approach will be applied under Output 2.1.3 in order to maximize stakeholders' engagement in the formulation and implementation of the 'Eua Watershed Management Plan. In this case the project's actions will build upon the bases of trust, participation and engagement established through actions supported by GIZ on this island; GIZ will continue to provide advisory support to the project in order to ensure the continuity of the participatory approach applied there.

16. Stakeholder engagement in the actions proposed under Component 3 will be promoted through a participatory approach to extension, including the use of: Farmer field schools for participatory problem analysis and development of SLM practices (Output 3.2.2) and the systematisation of traditional tree management systems (Output 3.3.2) as the starting point for the promotion of improved tree management and restoration.

17. Actions under Component 4, meanwhile, will focus on knowledge management, including the effective systematization and dissemination of results lessons learned at field level. This knowledge and messages will be fed to actors with influence on policy and regulatory frameworks, and technical support, thereby promoting their engagement and motivating them to take effective action, especially under Component 1.

B. 2. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF):

18. The project is expected to provide both direct and in-direct benefits to a wide range of stakeholders. The most significant socioeconomic benefits will be as follows:

- Increased crop production and improved local environments in villages where piggeries are installed (under Component 3), as a result of reductions in the damage caused by roaming pigs.
- Increases in levels, sustainability and diversity of agricultural production as a result of the application of integrated nutrient management and agroforestry systems.
- Access to biogas for cooking and lighting, from the piggery/biodigester systems, reducing the workload of fuelwood collection and expenditures on lamp oil and bottled cooking gas.
- Improved security of tenure, in the form of longer term assured rights to use and manage land, as a result of the multi-stakeholder negotiation processes proposed under Component 2.

19. The project has the potential to generate significant gendered benefits for women, including the following:

- Increase in access to clean biogas for cooking and lighting, thereby reducing their workload in gathering firewood, and improving the home environment.
- Increased opportunities for the generation food and income through small-scale vegetable and fruit production, and improvement of sanitary conditions, due to the elimination of roaming pigs from the village environment.
- Reductions in the impacts of sediment run-off on fisheries in near-shore areas, on which women traditionally depend for household consumption and sale.
- Increased opportunities for handicraft production and other economic activities based on agroforestry products such as pandanus, paper mulberry and vanilla.

20. In quantitative terms, the estimated numbers of people benefitting directly or indirectly from the project will be as follows:

- 20 members of Government institutions and 28 members of NGOs have received training through modules developed by the project, and show improved knowledge, attitudes and practices (KAP) as a result

- 20 members of Government institutions and 28 members of NGOs report using training manuals developed by the project as regular guides for their work.
- 225 allotment ('api tukuhau) holders (at least 30 in each target locality) applying integrated agroecosystem management practices that contribute to the sustainability of their production systems and livelihoods.
- 30 farmers in each target locality with 15% increases in crop yields over 100ha.
- 225 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their farms
- 130 households benefiting from biogas produced from piggery biodigesters

21. The delivery of these socioeconomic benefits will directly underpin the delivery of global economic benefits. Specifically, the benefits of the piggery/biodigester systems in terms of biogas generation for local use, reductions in crop damage and improved village environments, will provide direct motivations for local communities to adopt these systems, resulting in the parallel generation of GEBs in the form of increased sustainability of land management, reduced impacts on biodiversity and forest resources and (incidentally) reduced emissions of methane.

B.3 Explain how cost-effectiveness is reflected in the project design:

22. The opportunities for rehabilitating degraded landscapes are severely limited by the problem of roaming pigs. The pigs prey on vegetable crops, including root crops, and tree seedlings. One option that has been tried is improve fencing around crops and tree seedlings, but experience has shown that these fences are easily broken by the pigs and often are not repaired over time.

23. Simply put, the best option for long-term sustainability of increased vegetative cover and increased productivity of land is to remove the pigs from the environment. However, past attempts at large, communal piggeries have failed, as has enacting laws to require that all pigs be penned (due to social and cultural factors, namely the reluctance for people to kill their neighbour's pigs even if found destroying their crops). As a result, the best option for removing the pigs from the environment is to provide positive incentives (eg. support for growing fodder crops to feed pigs, biogas production to power cooking stoves and lighting, organic fertilizer from the bio-slurry) to households to do so.

24. The piggery/biogas systems installed by MAFFF with support from China Aid have proven to work well at the household level. The challenge now is to scale these systems up from the household to the community level, which is the focus of Component 2 of this project. Four pilot communities have been carefully selected to trial these community-level activities; all have shown a keen interest in penning their pigs and reaping the benefits of biogas and organic fertilizer production. The project is designed to provide support to these pilot communities as a way of demonstrating the benefits of penning pigs, with the longer-term impact expected to be increased interest and up-take of the piggery/biogas systems by other communities.

25. The activities focused on improving the planning and management of the 'Eua Watershed are designed to support the natural water flows that the people of 'Eua depend on. One estimate of the costs of finding and providing alternative sources of water to 'Eua communities is upwards of US\$2 million, meaning that protecting the watershed is far more cost effective than the alternative.

26. Supporting the enhancement of the Land Administration system (SOLA) will have multiple positive benefits for government, land owners, and the private sector, as it streamlines the land transaction process as well as ensures land records are more secure. The current back log in digitizing land records and transactions reduces the incentives for people to invest in their land. Further, the lack of digitized spatial data for land records makes any type of zoning or land use planning impossible in any other way than an ad-hoc, project-funded basis. Investing in the central system and its capacity to process spatial data and produce maps to be used for land use planning and management will produce long-term benefits for a

range of stakeholders, including those committed to improving their environment and protecting key ecosystems from ad-hoc, unplanned development and encroachment.

C. DESCRIBE THE BUDGETED M&E PLAN

27. Monitoring and evaluation of progress in achieving project results and objectives will be done based on the targets and indicators established in the Project Results Framework (Annex A). The project Monitoring and Evaluation Plan has been budgeted at USD 112,800 (see below). Monitoring and evaluation activities will follow FAO and GEF monitoring and evaluation policies and guidelines. The monitoring and evaluation system will also facilitate learning and replication of project results and lessons in relation to integrated management of natural resources.

Summary of main monitoring and evaluation activities

Type of M&E Activity	Responsible Parties	Time-frame	Budget
Inception Workshop	NPD, PM, FAO (BH, LTO, and the GEF Coordination Unit)	Within two months of project start up	USD 2,000 and FAO cost covered by agency fee
Project Inception Report	NPD and PM, cleared by LTO, BH, and the FAO GEF Coordination Unit	Immediately after the workshop	Project staff covered by co-financing and FAO cost covered by fees
Field-based impact monitoring	PM, institutions and pilot villages communities, and farmers participating in the project	Continually	USD 10,800 (9% of project coordination time, technical workshops for identification of indicators, M&E workshops)
Supervision visits and rating of progress in PPRs and PIRs	PM, LTO and other technical units supporting the project, TCI/GEF Coordination Unit	Annual or as required	FAO visits will be financed through GEF agency fee. Project coordination visits will be financed by the project travel budget
Project Progress Reports (PPR)	PM with inputs from; FAO LTO and BH; BH to submit PPR to GEF Coordination Unit for clearance and uploading on FPMIS	Six-monthly	Included in salary of project manager; inputs from FAO will be covered by fee
Project Implementation Review (PIR) report	FAO LTO and PM supported by the NPD and PSC. PIRs cleared and submitted by the FAO GEF Coordination Unit to the GEF Secretariat	Six-monthly	Covered by project staff time& agency fee
Co-financing Reports	PMO, LTO, and BH	Annual (with PIR)	Covered by project staff time & agency fee
Technical reports	PM, LTO, BH	As appropriate	Included in cost of consultants and budget for information supplies, co-financing, etc.
Mid-term Evaluation	FAO Office for Evaluation to recruit external consultants; evaluation conducted with inputs from the project stakeholders and the project team including the FAO GEF Coordination Unit, the LTO, BH	At mid-point of project implementation	USD 50,000 for two independent consultants and associated costs. In addition the agency fee will pay for expenditures of FAO staff time and travel

Type of M&E Activity	Responsible Parties	Time-frame	Budget
Final evaluation	FAO Office for Evaluation to recruit external consultants; evaluation conducted with inputs from the project stakeholders and the project team including the FAO GEF Coordination Unit, the LTO, BH	At the end of project implementation	USD 50,000 for two independent consultants and associated costs. In addition the agency fee will pay for expenditures of FAO staff time and travel
Terminal Report	PMO, BH, LTO, TCSR	At least two months before the ending date of the project	Included in salary of project manager; inputs from FAO will be covered by fee
Total Budget			USD112,800

28. An independent Mid-Term Evaluation (MTE) will be undertaken at the end of the first 24 months of project implementation to review progress and effectiveness of implementation in terms of achieving project objective, outcomes and outputs. Findings and recommendations of this review will be instrumental for bringing improvement in the overall project design and execution strategy for the remaining period of the project's term if necessary. FAO (the Office of Evaluation) will arrange for the MTE in consultation with project management. The evaluation will, *inter alia*:

- a) Review the effectiveness, efficiency and timeliness of project implementation;
- b) Analyse effectiveness of partnership arrangements;
- c) Identify issues requiring decisions and remedial actions;
- d) Propose any mid-course corrections and/or adjustments to the implementation strategy as necessary; and
- e) Describe the technical achievements and lessons learned derived from project design, implementation and management.

29. An independent Final Evaluation (FE) will be carried out three months prior to the terminal review meeting. The FE will aim to identify the project impacts, sustainability of project results and the degree of achievement of long-term results. The FE will also have the purpose of indicating future actions needed to expand on the existing Project in subsequent phases, mainstream and up-scale its products and practices, and disseminate information to management authorities and institutions with responsibilities in food security, conservation and sustainable use of natural resources, small farmer agricultural production and ecosystem conservation to assure continuity of the processes initiated by the Project. Critical elements that both the MTR and FE will pay special attention to are the outcome indicators.

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

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

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Mr. Asipeli Palaki	CEO GEF Operational Focal Point	MINISTRY OF LANDS, ENVIRONMENT, CLIMATE CHANGE AND NATURAL RESOURCES	01/07/2014

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 CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Gustavo Merino Director Investment Centre Division, Technical Cooperation and Programme Management FAO Viale delle Terme di Caracalla 00153 Rome, Italy <u>TCI-</u> <u>Director@fao.org</u>		21 July, 2016	Subregional Coordinator, FAO Subregional Office for the Pacific Islands, Apia, Samoa	+685 22127	<u>SAP-SRC@fao.org</u>
Jeffrey Griffin Senior Coordinator, GEF Coordination Unit Email: <u>GEF-Coordination-Unit@fao.org</u> Tel: +3906 5705 5680			Naoko Nakagawa, GEF Coordination Unit	+39 (0)6 570 55817	<u>Naoko.Nakagawa@fao.org</u>

ANNEX A: PROJECT RESULTS FRAMEWORK

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
Project Objective: To strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes						
Component 1: Improving the enabling environment for integrated land and agro-ecosystem management.						
1.1: Increased acknowledgement and incorporation of integrated land and agro-ecosystem management principles in national policies, laws, and regulations	Number of ILAM Policy Intention Papers cited in sectoral policies, strategies and plans	No Policies specifically indicate intention to promote ILAM.	At least one (1) Policy Intention Paper developed, related to a key sector in ILAM approach.	At least 3 ILAM Policy Intention Papers cited in sectoral policies, strategies and plans.	Review of sectoral policy, strategy and planning documents	High level commitment from MAFF to influencing sectoral policies and plans
					<i>Output 1.1.1: Policy intention papers to inform sectoral policy and planning processes</i>	
					<i>Output 1.1.2: National Land Use Policy document</i>	
1.2: Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide	Number of 'complete watershed' areas with up to date cadastral maps used for GIS-based applications for land use planning and for monitoring land use changes over time.	None of the 'complete watershed' areas i.e., project locations have up-to-date allotment cadastral layer of map data available for developing mapping products.	Up-to-date allotment cadastral layer of map data available for developing mapping products.	4 'complete watershed' areas, with completed up to date cadastral maps used for GIS-based applications for land use planning and for monitoring land use changes over time.	Review of GIS-based applications	Staff stability in MLSNR
Degree of completion	of allotment map data capture and quality improvement work	Less than 10% of both the tax and town allotments in the right allotment map data quality for digital capture	Allotment map data capture and quality improvement work at least 70% completed	Allotment map data capture and quality improvement work at 100% completed.	Allotment map data capture and quality improvement work	MLSNR reports
Level of in house capacity in MLSNR for data capture and input	Tonga SOLA system not able to utilize spatial functionality of SOLA to deal with the cadastral mapping due to significant gaps in capacity for data capture and data quality.	Tools required for data improvement work in place and local staff received training on these tools.	By project end MLSNR staff have assumed all responsibility for data capture and input	MLSNR reports		
Capacity of MLSNR to	Land administrative				MLSNR is actively	MLSNR reports

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
	streamline business processes and accept applications and new survey plan data digitally through the internet.	predominantly paper-based		accepting applications and new survey plan data digitally through the internet.		
		<i>Output 1.2.1: National System of Land Administration enhanced, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure.</i>				
<u>1.3 Improved strategic planning and management of forest resources</u>	Extent of application of National Strategic Forest Development Plan by Central and local government bodies and civil society organizations	No National Strategic Forest Development Plan (NSFDP) exists to implement the 2009 Tonga Forest Policy.	Central and local government bodies and civil society organizations have reflected the provisions of the Plan in their own operational plans	Review of operational plans	Buy-in to the NSFDP among key stakeholder institutions	
	Degree to which National Forest Monitoring System (FMS) is utilised in planning	No Forest Monitoring System in place	Conceptual design and workplan for establishing the FMS developed; Implementation at least 15% completed.	A fully functional FMS is in place and its data outputs are being used in planning by key entities of central and local Government and civil society organisations.	Review of FMS Interviews with members of user entities Review of planning documents using FMS data	
		<i>Output 1.3.1: National Strategic Forestry Development Plan developed</i>				
		<i>Output 1.3.2: National Forest Monitoring system</i>				
Component 2: Site-based capacities for evidence-based negotiation of land use planning, management and tenure rights						
<u>2.1 Capacities for evidence-based and negotiated formulation of resource management plans at landscape and village levels, clarification of farmers' tenure rights and obligations</u>	Frequency of meeting of multi-stakeholder mechanisms in target locations	N/A	Multi-stakeholder mechanisms are active at least twice per year in target locations	Multi-stakeholder mechanisms are active at least twice per year in target locations	Minutes of meetings of multi-stakeholder mechanisms	Recognition by members of target communities of the need to enter into negotiation and resolve issues
	Representativeness of participation in multi-stakeholder mechanisms in target locations	N/A	All key stakeholder groups (commoners and nobles, men and women) participate actively in the mechanisms	All key stakeholder groups (commoners and nobles, men and women) participate actively in the mechanisms	Minutes of meetings of multi-stakeholder mechanisms	Social and cultural acceptance of multi-stakeholder negotiation
	Percentage of participants in multi-	N.A	50%	80%	Questionnaires, interviews and focus	

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
stakeholder mechanisms consider that the mechanism contributes significantly to resolving issues that impede equitable and sustainable approaches to land management	Degree of initial implementation of 'Eua Watershed Management Plan (WMP)	Inter-sectoral Committee established with GIZ support, to coordinate work on a Catchment Area Management Plan.	Draft Plan developed, including identification of alternatives for farmers to reduce encroachment, and rehabilitation plans for degraded forest areas.	Operational plan developed for the implementation of the 'Eua WMP over at least the project period, and corresponding activities implemented in accordance with the plan.	Review of operational plan Interviews with entities and communities involved in plan implementation	groups with participants
Effectiveness of the Plan in reducing encroachment on forests in the watershed	75 ha of farmed land within the catchment areas (45 registered tax allotments) relocated and rehabilitated with forest as a conservation area	90 ha of farmed land rehabilitated with forest as part of the expanded 'Eua Watershed Catchment area under the WMP	No new instances of clearance of forests in the watershed for agriculture	Interviews with community members, direct observations		

Output 2.1.1: Multi-stakeholder mechanisms for the negotiation of resource management and tenure

Output 2.1.2: Negotiated and evidence-based plans for land use and integrated agroecosystem management at landscape and village levels

Output 2.1.3: 'Eua Watershed Area Management Plan developed, and implemented

Component 3: Strengthening of capacities for the formulation and implementation of sustainable land management practices with an integrated R2R approach

3.1: Increased capacities in Government institutions and NGOs for identifying and supporting SLM	Numbers of staff members in Government institutions and NGOs who have received effective training	None	8 members of Government institutions ³ and 14 members of NGOs ⁴ have received training through the modules	20 members of Government institutions and 28 members of NGOs have received training through the modules	Records of training events, KAP surveys.	Stability of staff members
						Receptivity of members of target institutions (at

³ 4 Field Project Officers + 4 MAFF Extension Officers (1 per island group)

⁴ 4 from TRIP (1 in each island group) + 4 Langafonua'a Fafine Tonga (1 rep per island group) + 4 Tonga Livestock Farmers Council (1 per island Group) + 2 Agriculture Schools (1 Hango, 1 Tupou)

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
amounts of firewood collected from vulnerable forest areas (in the target localities where such forest areas exist).	Baseline to be established at project start	baseline levels (baseline to be established at project start)	baseline levels	baseline levels	questionnaires or focus groups	
Percentage increase in water harvesting and storage capacity in target communities (m^3/month).	Baseline to be established at project start	At least 20% increase in water storage capacity in whole area where piggeries and intercropping systems will be covered under each ILAMP.	At least 50% increase in water storage capacity in whole area where piggeries and intercropping systems will be covered under each ILAMP.	At least 50% increase in water storage capacity in whole area where piggeries and intercropping systems will be covered under each ILAMP.	Household surveys, focus groups and field inspections	
Availability of water to local communities in target localities	Baseline to be established at project start	No net reduction in water availability for domestic uses in pilot communities, despite the establishment of piggeries.	No net reduction in water availability for domestic uses in pilot communities, despite the establishment of piggeries.	No net reduction in water availability for domestic uses in pilot communities, despite the establishment of piggeries.	Household surveys and focus groups	
Percentage reduction in crop damage and loss from roaming pigs in pilot communities and demonstration sites.	Baseline to be established at project start	On average farmers in the pilot communities report a 25% reduction in the areas of crops damaged by roaming pigs.	On average farmers in the pilot communities report a 75% reduction in the areas of crops damaged by roaming pigs.	On average farmers in the pilot communities report a 75% reduction in the areas of crops damaged by roaming pigs.	Household surveys, focus groups and field inspections	
Numbers of farmers in target localities with increased crop yields	Baseline to be established at project start	12 farmers in each target locality with 15% increases in crop yields over 40ha.	30 farmers in each target locality with 15% increases in crop yields over 100ha.	30 farmers in each target locality with 15% increases in crop yields over 100ha.	Household surveys, focus groups and field inspections	
Numbers of farmers in target localities who report an increase of at least 20% in the numbers of established (live after 1 year) trees on their	Baseline to be established at project start	75 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their	225 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their	225 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their	Farmer interviews corroborated by selective ground truthing	

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
(live after 1 year) trees on their farms		farms	farms	farms		
Avoidance of CH ₄ emissions as a result of the use of piggery waste as biogas fuel	N/A	247tCO ₂ eq/year	247tCO ₂ eq/year (988t total by project end)	247tCO ₂ eq/year (988t total by project end)	Inspections of numbers of pigs managed, biogester volumes and effectiveness, and numbers of households using biogas as fuel	
Numbers of households benefiting from biogas produced from piggery biogesters	No households use biogas and 70% use bottled gas	70, with a corresponding 7% reduction in the amounts of bottled gas used	130, with a corresponding 14% reduction in the amounts of bottled gas used	130, with a corresponding 14% reduction in the amounts of bottled gas used	Household interviews/questionnaires	
Numbers of people in target villages where pig management practices have been modified who report no reduction in their abilities to meet social and cultural obligations	Baseline to be established at project start	100% of interviewees in villages where pig management practices have been modified report that there has been no reduction in their abilities to meet social and cultural obligations	100% of interviewees in villages where pig management practices have been modified report that there has been no reduction in their abilities to meet social and cultural obligations	100% of interviewees in villages where pig management practices have been modified report that there has been no reduction in their abilities to meet social and cultural obligations	Participatory retrospective time line exercises with community members	
<i>Output 3.2.1: Demonstration modules for integrated agroecosystem management systems</i>						
<i>Output 3.2.2: Farmer field schools for participatory problem analysis and development of SLM practices</i>						
<i>Output 3.2.3: Extension modules applied in target communities</i>						
3.3. Increased capacities for the formulation and implementation of forest restoration plans, and for supporting improved management of forests, mangroves, and trees outside forests	Area in target localities covered by operational plans and Sustainable Forest Management Agreements (SFMAs) that are under effective implementation	No areas under SFMAs	Forestry Division and communities concerned agree that the provisions of operational plans and SFMAs covering 150ha ⁵ are being met	Review of plans and SFMAs, interviews with Forestry Division staff and community members	Continued commitment of community members to reforestation and forest protection	
Numbers of tree nurseries nationwide able to meet their seed supply requirements	No nurseries currently meet seed supply requirement	30% of tree nurseries nationwide are able to meet at least 90% of their seed supply	80% of tree nurseries nationwide are able to meet at least 90% of their seed supply	Forestry Division records based on nursery reports		

⁵ Assuming 20% of each tax allotment = 225 total covering 750ha to be trees/forest

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
	Number of tree nurseries nationwide with long term funding needs ensured	No nursery has secure long term funding (where land managers express intention to maintain the area under forest and there are at least XX trees/ha already present alive after 1 year)	30% of tree nurseries nationwide with long term funding needs ensured (from sources other than short term project-based support)	80% of tree nurseries nationwide with long term funding needs ensured (from sources other than short term project-based support)	Interviews with Forestry Division and nursery managers	
	Area of agricultural land returned to forest use in the target localities	Baseline to be established at project start	30ha	100ha	Interviews with land managers, and selective surveys	
Output 3.3.1: Operational plans for forest restoration, including mangroves, formulated and implemented						
Output 3.3.2: Systematisation of traditional tree management systems						
Output 3.3.3: Sustainable Forestry Management Agreements						
Output 3.3.4: Improved mechanisms for supply of tree seed and planting materials						
Output 3.3.5: Training modules on forest restoration and management, for Forestry Division staff and community members						
Outcome 4.1 Project implementation is based on results-based management and application of lessons learned and good practices in current and future interventions.						
4.1 Project implementation is based on results-based management and application of lessons learned and good practices in current and future interventions.	Number of ILAMS reports presented at R2R regional meetings or shared with R2R regional networks	N/A	At least 2 technical reports presented at R2R regional meetings or disseminated through R2R regional networks	At least 2 technical reports presented at R2R regional meetings or disseminated through R2R regional networks	Review of reports	Stability of staff
	Number of Technical or Policy reports published on MAFFF website and ECC Portal	N/A	At least 4 Technical or Policy reports published on MAFFF website and ECC Portal	At least 10 Technical or Policy reports published on MAFFF website and ECC Portal	Review of reports	
Output 4.1.1: Monitoring and evaluation system established, supporting adaptive project management						
Output 4.1.2: Mechanisms for effective management and dissemination of knowledge within Tonaa and the region						

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

STAP comments (24 February 2014)	Responses
<p>1. The PIF presents a bleak view of the current situation, - barriers described appear to be insurmountable - so the assessment of significant risk seems valid, and the modest claims for benefits would seem to be realistic. However, the baseline activities are not clearly described and therefore incremental benefits are hard to assess.</p>	<p>The incremental logic has been reviewed, the barriers reformulated to ensure logical correspondence with the components, and additional detail has been added to the baseline description. In summary, the main elements of the incremental logic, and the project strategies to surmount the presented barriers, are as follows:</p> <ul style="list-style-type: none"> - Investments under the NBSAP, National Land Use Policy and National Spatial Planning and Management Act provide favourable policy and legislative conditions for integrated land management and environmental protection; activities under Component 1 will support the incorporation of an integrated, holistic and landscape-wide vision which is currently lacking from this baseline. - The Lands Department has been working with FAO to customize the computerized Solutions for Open Land Administration, in order to support the regularisation of land tenure; under Component 2, the project will support the application of tenure and leasehold models that favour long-term approaches to land management. Most significantly, the project will support negotiated approaches to land use planning and the improvement of tenure security, that will help to address inequities and consequent barriers to SLM even if the underlying legal framework governing tenure is not modified in the short term. - The SOLA system implemented in November 2013 initiated the digital capture of both the tax and town allotments and started to address data quality issues with the allotment map data; incremental support to be provided under Component 2 will result in improvements in capacities to monitor land use changes over time, as the basis for the land use planning. - Government ministries provide sectoral support including planting materials and technical advice to select communities as financial and technical resources allow, primarily through externally-funded projects; however service delivery is hampered by inadequate funding for planting materials propagation and inadequate staffing levels. Under Component 3, the project will provide further direct support to developing communities' capacities and awareness of SLM; incremental support will focus on developing alternative, cost-effective and sustainable models for learning and technology generation (e.g. FFS). - Investments in land use planning and forest conservation are hampered by inadequate information on forest resources and trends over time; incremental support will establish, in collaboration between the Forest Division of MAFFF and 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. - The Government, with support from external agencies, is supporting agricultural extension but human and financial resources are insufficient to ensure the required extent and sustainability of coverage. GEF incremental support under Component 3 will focus on developing Government capacities in this regard, but also on reducing communities' dependence on external technical support by working wherever possible with the adaptation of traditional practices and developing the capacities of community members and their organisations for situation analysis and the generation and transfer of knowledge.
<p>2. Components 1, 2 and 4 are poorly developed. While the proposal seeks the majority of funding for land degradation, a comprehensive</p>	<p>The project components have been restructured in order to relate them more logically to the described barriers, and to place increased emphasis on the need to support negotiated multi-stakeholder approaches to land tenure, planning and management.</p>

STAP comments (24 February 2014)	Responses
<p>approach to management of land degradation is not presented; rather the strategy to manage land degradation appears to rely almost entirely on housing or confining pigs.</p>	<p>The threats analysis has been expanded to make clearer the multiple aspects of land degradation that the project will address, including the degradation of soil and water resources through the inappropriate use of inorganic fertilisers; the direct and indirect implications of free-ranging pigs in terms of land degradation, as well as their impacts on crops; and deforestation and degradation of forests due to agricultural expansion and household demand for forest products.</p> <p>The restructuring of the components reflects the need for an integrated and landscape wide approach to addressing these threats, rather than solely farm- or technology-specific actions. Actions under Component 2 will address barriers related to land use planning and tenure, in order to ensure that productive and extractive activities are adequately located in the landscape, in order to reflect variations in environmental vulnerability and address threats operating at landscape level, and that farmers have adequate security of tenure to allow them to address land degradation processes through long-term SLM practices.</p> <p>The description of technical solutions to be promoted under Component 3 has been expanded, to make clear that these constitute a balanced and integrated range of options, which will be adjusted according to the needs and conditions in each target site and complemented as necessary by the adaptation of traditional practices or other options proposed by community members. Piggeries will be one element of integrated farm-wide systems, generating environmental benefits both directly and indirectly: they will feed into other elements of the system, including integrated nutrient management (through the use of piggyery biogas digestate as fertiliser), which will also include other approaches such as the use of Mucuna cover crops and nutrient recycling by trees in agroforestry systems.</p>
<p>3. There is very limited detail on the proposed components, apart from the strategy to house pigs for biogas production. The other elements envisaged in Component 2, integrated agro-ecosystem management systems, should be described.</p>	<p>The introduction to Component 3 now includes descriptions of the different elements of the integrated agroecosystem management systems, including (in addition to piggeries) the use of Mucuna cover crops and agroforestry systems.</p>
<p>4. Controlling pigs is a desirable objective that will deliver multiple benefits; however, it is not clear how this constitutes an integrated agro-ecosystem management system.</p>	<p>It has now been made clearer in the document that controlling pigs does not in itself constitute an integrated agroecosystem management system. It is one element of these integrated systems, linked to a number of other elements including integrated nutrient management, agroforestry and reforestation (please see response to point 2 above).</p>
<p>5. Several aspects could be clarified in the full proposal, such as how the pigs will be fed, and how social barriers to adoption of the alternative approach to raising pigs will be overcome.</p>	<p>It is now explained in the introductory text to Component 2 (Box 3) that an initial requirement for the successful establishment of the pilot piggeries will be an external supply of feed; however, once the piggeries are established, the pressures of roaming pigs on the local environment will be eliminated, allowing agricultural production to recover and generate a surplus of fodder and root crops that in the long term will constitute a sustainable substitute to the donated feed. This feed will be complemented by other sources such as coconuts and breadfruit, availability of which will be increased through the project's investment in forestry and agroforestry; and by-products of the processing of agricultural products such as the extraction of virgin coconut oil in the processing plant at Tatakamotonga, East of Nuku'alofa on Tongatapu</p>
<p>6. In the section on expected global environmental benefits please note that organic fertiliser from biogas digestate will replace expensive and GHG-intensive chemical fertiliser (not pesticide!).</p>	<p>This has been corrected.</p>
<p>7. To address the issue of limited energy sources, perhaps the proponent could consider energy crops such as coconut or oil palm, which can be</p>	<p>Traditional farming systems in Tonga are already dominated by coconut palms. Coconut and other trees replanting nationwide is part of the key activities in Component 3 for promoting and strengthening agro-forestry systems. These trees will contribute significantly to the demand for fuelwood as 75% of Tongan households cook using</p>

STAP comments (24 February 2014)	Responses
<p>successfully cultivated on degraded land, restoring soil and biomass carbon and substituting for imported fossil fuels. A sustainability assessment would need to be undertaken in assessing the viability of integrating energy crops into agricultural systems that also takes into account recovery of forest biodiversity.</p>	<p>fuelwood obtained from scattered large hardwood trees and shrubs from tax and urban allotments, unused land and forests, from coconut slabs, mill off-cuts, husks and shells. Oil palms have a much deeper shade, and it would pose more of a challenge to combine these with traditional farming systems without displacing food production. Currently most firewood comes from secondary and fallow vegetation occurring in these traditional farming systems, as well as remaining coastal forests. The proposed project approach will focus on supporting the modification of existing production systems in order to increase their ability to generate firewood, and to develop conditions of governance and awareness in order to reduce the pressures of firewood extraction on coastal forests.</p>
<p>8. The full proposal should detail the proposed technique for rainwater harvesting.</p>	<p>Rainwater will be harvested with two objectives: 1) to supply the piggeries, in order to avoid placing additional demands on community water resources, which are already scarce during drought periods; 2) for the irrigation of small-scale vegetable gardens (it is unlikely that storage capacities and labour availability would be sufficient to permit larger scale irrigation of agricultural crops).</p> <p>It is foreseen that rainwater will be collected from corrugated iron roofs and channelled from there via gutters to ferrocement holding tanks. In order to minimise the risk of these acting as foci for the propagation of malarial mosquitos, these will either be covered or fish will be introduced into them.</p> <p>The precise designs of the rainwater harvesting systems will be confirmed as part of the ILAM Plans to be developed under Output 2.1.2. This is proposed as the rainwater harvesting systems have to be site-specific to take into account the available areas of rooftops (on piggeries, houses and all other dwellings) and location of these rooftops, which will determine the sizes and number of water storage tanks to be used for rainwater harvesting.</p>
<p>9. It is not clear how Component 1 will deliver the outcomes claimed, especially reduced vulnerability to drought, and how the proposed policy framework will tackle the issue of agricultural expansion.</p>	<p>Component 1 has now been reworded: rather than focusing on specific issues such as reduced vulnerability to drought, activities under this component will aim to provide a more favourable enabling policy and regulatory environment for sustainable land management in general. This will be achieved, for example through policy guidance papers that aim to promote compatibility between the development of productive sectors and the sustainability of land management, and a policy framework that permits SLM-friendly land use planning; improvements in land use planning capacities; and strengthened capacities for monitoring forest resources and planning forest restoration. Actions under Component 1 will address the issue of agricultural expansion by making SLM practices more accessible to producers, thereby reducing the need to abandon degraded lands and expand into new areas; improving land use planning in order to avoid high priority areas for protection being subject to agricultural expansion; improving tenure conditions, enabling farmers to consolidate their SLM practices on existing holdings; and creating favourable enabling conditions for the restoration of areas affected by expansion.</p> <p>Activities under the reformulated Component 1 will not in themselves be sufficient to deliver SLM benefits: these will be achieved by complementing these actions with local level actions aimed at strengthening land use planning and tenure under Component 2, and strengthening capacities for the application of SLM practices under Component 3.</p>
<p>10. Component 4 is a generic description that would benefit from more detail that demonstrates understanding of the particular constraints to adoption in this community</p>	<p>As reformulated, community-level awareness barriers to SLM adoption are addressed under Component 3, which focuses on knowledge generation and transfer, and particularly participatory problem analysis. The corresponding barriers, now presented in the ProDoc, are:</p> <ul style="list-style-type: none"> - Failure of knowledge, capacities and awareness among land managers to keep up with the pace of the changes affecting the agricultural sector and socioeconomic conditions - Difficulty of reconciling cultural traditions with the need to address their environmental implications - Inadequacy of technical and financial resources in Government to meet the

STAP comments (24 February 2014)	Responses
	<p>challenge of supporting the population in adapting to these changes, and to carry out related research.</p> <p>Component 4 will in fact address the barrier of inadequate access on the part of land managers and supporting institutions to information on best practices and lessons learned regarding SLM. Details of outreach and communications are provided in output 4.1.1. The approach is to build, and go beyond on the ‘how to’ manuals and guides as toolkits to be developed to support implementation in component 2, to highlighting the positive impacts as a result of following the ‘toolkits’ and adopting ILAM practices. Evidence of positive impacts is crucial to bringing about behaviour change.</p>
<p>11. STAP requests that the proponents clarify the proposed linkage and integration with the second biodiversity-focused project (UNDP). This linkage is alluded to in section A.4 on Coordination but not in sufficient detail. The concern that STAP has relates to the need to integrate policy and land use planning approaches which are not cross-referred to the proposed biodiversity focused project from the present project, except very briefly from Component 2.</p>	<p>The UNDP project area will overlap with one of the FAO project target areas, but with an emphasis on different specific technical aspects. The UNDP project will generate lessons on how to address specific coastal BD issues, and fisheries management, within the R2R vision, which may be transferrable to the other target areas of the FAO project; while the FAO project will focus in more detail on farm system aspects. There will be direct collaboration in the provision of training; the UNDP ProDoc says “Villagers and landowners living in the lagoon watershed will receive training to develop practical skills to successfully manage 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 raise environmental awareness of participants and will strengthen their commitment and involvement to the project implementation to minimize pollution loading into the lagoon”.</p> <p>Impact monitoring will be coordinated between the two projects, especially in relation to fertiliser and sediment inputs into the lagoon, which may be influenced by the FAO project.</p> <p>The zoning and planning foreseen under Output 2.1.5c of the UNDP project will be closely coordinated and wherever possible integrated with the processes promoted through the FAO project, in order to ensure consistency and help build up a critical mass of trust and awareness more effectively than with parallel initiatives.</p> <p>The stakeholder bodies proposed within the “Multi-stakeholder management system” for the lagoon catchment, to be established under the UNDP project, will also be used as channels for stakeholder contact and engagement through this project, and may serve as models that the FAO project could also use elsewhere in the same target area and/or in the other target areas.</p> <p>Only the FAO project will work on policy issues, so the FAO project’s policy outcomes (and other “enabling environment” work under Component 1) will have potential implications for the UNDP project and not the other way around. That being said, the UNDP and FAO projects will collaborate in the prioritisation (with local participation) of the specific issues to be targeted in the FAO policy and other enabling environment work.</p> <p>It is suggested that the coordinators of the two projects should be invited to participate in each other’s steering committee meetings as a specific mechanism for coordination.</p>
<p>12. Also section A.4 does not mention how the project will connect to or benefit from the regional parent Program. In particular, the ecosystem-based Ridge to Reef approach calls for a spatially coherent approach to land and water use. However, the choice of pilot sites and expected outputs of Components 1 and 2 appear to sit in isolation from the more strategic approach outlined for Ridge to Reef.</p>	<p>Section 1.1.1 of the Project Document provides background on how the project relates to the regional R2R programme as a whole, and Section 1.4.2 (Strategy) explains how, in accordance with the R2R concept, the project will address the flows of ecosystem services and impacts between different land units and activities at farm, community and landscape levels, and goes on to detail the core elements and principles of the project’s strategies in accordance with this R2R approach.</p> <p>In Section 1.2, the pilot localities have now been defined and justified in more detail, in accordance with this R2R approach. Each locality is now defined (and indicatively mapped) as a landscape across which flows of environmental threats and ecosystem services occur, which will be addressed in an integrated manner by the project. The precise ways in which the areas are defined vary between sites, in reflection of the diversity of</p>

STAP comments (24 February 2014)	Responses
This aspect should be clarified in the full project brief, including likely trade-offs and leakage estimates.	<p>conditions (ranging from steep islands such as 'Eua to flat, low-lying island such as Ha'ano) which limit the universal applicability of the watershed concept as conventionally applied under the R2R approach.</p> <p>Relations (tradeoffs and leakages) between the different interest groups located across these target areas will be addressed through processes of participatory negotiated territorial development under Component 2.</p>
On the other hand Component 3 on mainstreaming sustainable forest management could deliver useful and strategic results which will help to target remedial actions and can be well integrated into a Ridge to Reef approach.	Actions proposed under the original Component 3 are now integrated with those focused on agricultural and agroforestry elements in the landscape, in recognition of the need for these different landscape elements to complement each other.
<p>Integration and sustainability</p> <p>13. From the Program perspective the PIF proposes dissemination of lessons learned through the regional learning network but is silent about the regional support to be delivered to the project. For example, regarding capacity building and expertise sharing, STAP advised that the parent Program has the opportunity, at least for the cluster of 14 countries represented with the Program, to strengthen the scientific and technical linkages between the PICs, building upon the SOPAC mechanism. The Science, Technology and Resources Network (STAR) of SOPAC could build capacity to make operational a regional multidisciplinary network similar to the SIDSTAP concept, augmented with SOPAC-STAR support and in coordination with the University of the South Pacific</p>	<p>The project will facilitate the participation of national stakeholders in regional coordination on Ridge to Reef approaches, including participation in the capacity building and information sharing activities of the UNDP-GEF Regional R2R Project "Pacific Islands Ridge-to-Reef National Priorities – Integrated Water, Land, Forest and Coastal Management to Preserve Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods" of which SOPAC is the executing agency.</p> <p>Tonga R2R project will fund the participation of its project staff / key stakeholders (estimated at 1-2 persons) in capacity building activities developed by the R2R program. In addition, the national project staffs will participate in the activities of the regional project to strengthen the scientific and technical linkages between Pacific Island Countries for Ridge to Reef approaches. In addition, national stakeholders from the Tonga will participate in the Regional Scientific Conference on coastal and marine spatial planning in PICs, which will support the uptake of regionally accumulated scientific knowledge in policy-making and planning and will facilitate exchanges between government and the scientific community.</p>
<p>14. STAP recommended in its screening of the regional support project (GEF ID 5404) that it should include support for a multi-focal "PacIW:LEARN" for the region, which could act to sustain a peer to peer scientific and technical network for in-service training. This would satisfy the long standing demand under the Mauritius Strategy for Implementation, at least in this Pacific SIDS area. This advice was provided for the reason that, given the complex multidisciplinary threats and barriers shared by many of the PICs to be overcome, the sharing of expertise between PICs would strengthen sustainability of individual projects</p>	<p>The Tonga project will rely on guidance and support from the Regional R2R Project in developing knowledge management tools for Ridge to Reef approaches, including tools / processes to build on the previous regional project GEF-UNDP-UNEP Implementing Sustainable Integrated Water Resources and Wastewater Management (PaciIWRM). The Pacific IWRM project supported water governance reform, with most of the participating PICs having established Inter-ministerial Water Committees, developed national water policies, and completed national diagnostic reports for Water, Sanitation and Climate. These accomplishments, as well as a number of successful demonstration projects of ICM and IWRM developed in the Pacific and elsewhere, will be adapted for use in training by Pacific islanders to build local capacity for Ridge to Reef approaches that link coastal systems and catchment areas.</p> <p>The national R2R project also will strengthen Knowledge Management Systems for land and forest Areas. The project will support the establishment and management of databases and other information systems for land resource, designed to support sharing of information, best practices and resources in managing these sites and planning for and implementing island-wide interventions that can benefit multiple sites. The information resources will include: information on relevant laws, regulations, policies, management</p>

STAP comments (24 February 2014)	Responses
<p>within the Program, but also across the other GEF and non-GEF projects delivering against allied environmental targets. In this connection the inclusion of knowledge management (Component 4) is welcomed and STAP advises that beyond fulfilling IW:LEARN obligations, that the project should connect more formally to the proposed regional network as discussed above. Additionally, the baseline PacIWRM project's successful delivery of distance learning and twinning for IWRM capacity development is an excellent basis to build on regionally and nationally.</p>	<p>plans and authorities; the consolidation of existing mapping and GIS information, and any additional data developed by the project. The project also will make sure that national information is shared with and incorporates regional information, in the scope of the regional R2R programme.</p>

Response to the GEF Council Members Comments

Response to comments from Germany Council Member on Tonga project (March 2014 Intersessional Council Meeting)

Germany Council Member comment	FAO Response at CEO Endorsement Request
A spatial planning approach on land- and seascapes level for entire catchments and the marine protected areas should be considered to support a more integrated approach (March 2014)	The target locations have been defined as coherent landscapes (including coasts and inshore waters) on the basis of social and biological dynamics, as explained in Section 1.2 (the catchment concept is only applicable on 'Eua island, the other localities being virtually flat islands). In each of these areas, negotiated and evidence-based plans for land use and integrated agroecosystem management (ILAMS) will be developed at landscape and village levels (Output 2.1.2), and on 'Eua watershed management plan will be developed and implemented (Output 2.1.3).
Integrate at least one pilot (component 2) in an outer island area, to gain experience within this environment. It might be an important area for local renewable energy sources	The target localities are spread across a range of situations, including two in the Tongatapu group, one in the Ha'apai group and one in the northernmost Vava'u group.

Response to comments from Germany Council Member on the parent PFD (5395) (June 2013 Council Meeting)

Germany Council Member comment	FAO Response at CEO Endorsement Request
Since the proposed project is parenting fourteen Pacific Island Countries (PIC), the consideration of a comprehensive marine and coastal spatial planning	This comment is addressed through the response to the first comment by the Germany Council Member on the Tonga project, above. As set out in the Project Document, there will be close coordination between this project and the regional programme as a

<p>approach is requested at a regional scale and at on-the-ground intervention levels in order to balance environmental and socio-economic considerations, fostering a more integrated approach that can help to resolve conflicting natural resource uses and enhance ecosystem connectivity.</p>	<p>In relation to the (ecosystem-based) adaptation activities planned, it is requested that creating synergies between sub-national and national adaptation plans will be addressed. This could include consideration of measures to quantify and integrate ecosystem services when assessing and valuing EBA options.</p>	<p>During the formulation of the project proposal, the implementing agencies and the executing partners should actively seek contact with on-going projects funded by the German Government in order to ensure synergies and complementarities and avoid duplication of efforts, as well as consult with concerned national and local authorities for improved coordination and cooperation.</p> <p>The activities of the project on 'Eua island will build upon the GIZ-funded support to watershed planning and management there, and the project will also coordinate with the mangrove rehabilitation work currently being planned under the GIZ funded programme on Adaptation to Climate Change and Sustainable Energy (ACSE). This collaboration is formalized through a co-financing letter provided by GIZ; as stated in Section 3.4.1 of the Project Document, GIZ in-kind contribution will amount to approximately USD150,000 over the four years duration of the FAO project. It will include technical advisory services to ILAMS, building on GIZ experiences and tapping into good practices and lessons learned from the GIZ Programme - Coping with Climate Change in the Pacific Island Region as well as other on-going GIZ programmes in Tonga.</p>	<p>Response to comments from Japan Council Member on the parent PFD (5395) (June 2013 Council Meeting)</p> <table border="1"> <thead> <tr> <th data-bbox="897 280 976 2019">Germany Council Member comment</th><th data-bbox="976 280 1056 2019">FAO Response at CEO Endorsement Request</th></tr> </thead> <tbody> <tr> <td data-bbox="976 280 1056 2019"> <p>In implementing this project, please utilize the lessons learnt by the following projects listed below in order to maximize synergy effect [a list of projects funded by Japan UNDP Partnership Fund]</p> </td><td data-bbox="1056 280 1198 2019"> <p>Thank you for the comment. The project will seek to take lessons learned from the provided list of projects. Among them, particular attention is to be made to the "Regional Climate Change Ecosystems and Energy Programme from Reducing Emissions from Deforestation and Forest Degradation" implemented in Mongolia, Tonga, Solomon Islands, Samoa, Palau, Marshall, Kiribati and Fiji, to inform the implementation phase of the proposed project in Tonga.</p> </td></tr> </tbody> </table> <p>Response to France Council Member Comment on the PFD 5395 (June 2013 Council Meeting)</p> <table border="1"> <thead> <tr> <th data-bbox="1262 280 1341 2019">France Council Member comment</th><th data-bbox="1341 280 1429 2019">FAO Response at CEO Endorsement Request</th></tr> </thead> <tbody> <tr> <td data-bbox="1341 280 1429 2019"> <p>One specific issue on "monitoring and evaluation and knowledge management": In the program framework document, it seems that this component will be implemented through platforms and "appropriate media". We suggest developing</p> </td><td data-bbox="1262 280 1341 2019"> <p>As explained in the Project Document, the project will be closely coordinated with the regional R2R programme as a whole, including the exchange of knowledge, expertise, experiences and</p> </td></tr> </tbody> </table>	Germany Council Member comment	FAO Response at CEO Endorsement Request	<p>In implementing this project, please utilize the lessons learnt by the following projects listed below in order to maximize synergy effect [a list of projects funded by Japan UNDP Partnership Fund]</p>	<p>Thank you for the comment. The project will seek to take lessons learned from the provided list of projects. Among them, particular attention is to be made to the "Regional Climate Change Ecosystems and Energy Programme from Reducing Emissions from Deforestation and Forest Degradation" implemented in Mongolia, Tonga, Solomon Islands, Samoa, Palau, Marshall, Kiribati and Fiji, to inform the implementation phase of the proposed project in Tonga.</p>	France Council Member comment	FAO Response at CEO Endorsement Request	<p>One specific issue on "monitoring and evaluation and knowledge management": In the program framework document, it seems that this component will be implemented through platforms and "appropriate media". We suggest developing</p>	<p>As explained in the Project Document, the project will be closely coordinated with the regional R2R programme as a whole, including the exchange of knowledge, expertise, experiences and</p>
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<p>exchanges of experiences, and to build on the best practices, transfer practitioners on sites with similar problems and facilitate peer exchanges or twinning.</p> <p>It may be interesting to articulate the proposed GEF project with an existing project « Restoration of ecosystem services against climate change unfavorable effects – Rescue » (SPC - AFD - FFEM). Indeed, this project seeks to find longterm economic and financial solutions to ensure that ecosystem services are maintained in the Pacific islands, which climate change and societal changes are tending to put into danger. The overall objective of this regional project thus focuses on improving and sustainably funding integrated management of Pacific island coastal zones, where most Pacific islanders live and where climate change has many negative effects. The added value of Rescuce is that it proposes setting up economic and funding instruments (including payments for ecosystem services) at six pilot sites in the Pacific, so as to provide for the sustainable funding of activities after project completion.</p>	<p>Although RESCCUE will not work directly in Tonga, its approach is indeed highly relevant to and compatible with the Tonga project and opportunities for collaboration in terms of the exchange of knowledge and experiences will be explored at project start.</p> <p>Response to comments from the United States Council Member (March 2014 Intersessional Council Meeting)</p> <p>United States Council Member comment (March 2014 Intersessional Council Meeting)</p> <p>We request that the FAO further consider how capacities developed as a part of this project will contribute to the sustainability of the project outcomes in the context of the numerous barriers for addressing environmental issues enumerated within the project proposal.</p> <p>FAO Response at CEO Endorsement Request:</p> <p>Proposed capacity strengthening strategies of key importance for sustainability are set out in:</p> <p>Section 1.4.2:</p> <ul style="list-style-type: none"> - Consolidation of capacities and mechanisms for land use planning (LUP) with a watershed/landscape wide perspective, taking into account socioeconomic interactions and flows of ecosystem services and environmental threats between the different units that make up the landscape; - Development of capacities for participatory, negotiated, human-centered and evidence-based approaches to decision-making regarding land use and the modalities whereby stakeholders are able to secure longer-term access and manage the land, respecting cultural and customary dimensions; - Support to the development of capacities among stakeholders to formulate and apply sustainable and integrated land management practices, which meet their livelihood and economic development needs while addressing land degradation processes, and reflect variations in biophysical, socioeconomic and tenure conditions between different sites. <p>Section 3.3.3:</p> <ul style="list-style-type: none"> - Strengthening of Government capacities, and reduction of community reliance on external capacities: Significant capacity-building activities, for government and stakeholders alike, are included in the project to address capacity gaps. Project management will closely monitor
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<p>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. In addition, the project will seek to minimize communities' dependence on Government support by promoting their capacities for the participatory generation, adaptation and dissemination of SLM technologies, based wherever possible on traditional knowledge; and "low-tech" approaches to the production and supply of planting materials.</p>	<ul style="list-style-type: none"> - Development of capacities and governance mechanisms for the management and adaptation of technologies by local communities: the project will build on previous experiences with piggy systems in Tonga and community-based biogas systems in other countries, which have shown a high level of uptake and sustainability. On-going training in operating and maintenance of the entire system would be provided during project implementation. In addition, this training will focus on developing capacities among community members to troubleshoot technical, social or other problems that may arise in the future, while the community-based governance mechanisms to be supported by the project will facilitate the resolution of any stakeholder conflicts that may arise regarding, for example, roles and responsibilities for the maintenance of the systems, or the equity of the distribution of their benefits. 	<p>Development of capacities for innovation and adaptation to climate change: The project's approach will mitigate these risks by promoting capacities among extension agents and among community members to innovate and adapt the resource management systems they promote or apply, through the use of participatory, adaptive approaches to analysis, learning and technology generation such as farmer field schools. The project's support to negotiated approaches to addressing land use planning and land tenure issues will further enable communities to adapt to CC-related changes in biophysical and demographic conditions.</p>	<p>The proposed project interventions will contribute to the achievement of the medium term agriculture recovery from Tropical Cyclone Ian response plan for the Ha'apai and Vava'u groups. The activities of the project in support of nursery development and reforestation will help to enhance food security and forest condition, thereby contributing to the provision of social (medicinal, firewood, tools and utilities, timber etc.) and economic (virgin oil, livestock feed etc.) as well as ecological (environmental, erosion control, windbreaks, carbon sequestration etc.) values.</p>			
<p>Response to the United States Council Member Comment on the PFD 5395, made at June 2013 Council Meeting:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">The United States Council Member comment</td><td style="width: 50%; padding: 5px;">FAO Response at CEO Endorsement Request</td></tr> <tr> <td style="padding: 5px;">The United States requests to review this project again prior to CEO endorsement. Prior to CEO endorsement we ask for an explanation of how the concerns raised in the STAP's request for major revision have been addressed, particularly with regard to adding value to the program beyond its role as an enabling and coordination mechanism.</td><td style="padding: 5px;">Thank you for the comment. Responses to the STAP comments were provided with the CEO Endorsement Request. We trust that the CEO Endorsement Request package shall be circulated to the Council Members prior to CEO endorsement.</td></tr> </table>			The United States Council Member comment	FAO Response at CEO Endorsement Request	The United States requests to review this project again prior to CEO endorsement. Prior to CEO endorsement we ask for an explanation of how the concerns raised in the STAP's request for major revision have been addressed, particularly with regard to adding value to the program beyond its role as an enabling and coordination mechanism.	Thank you for the comment. Responses to the STAP comments were provided with the CEO Endorsement Request. We trust that the CEO Endorsement Request package shall be circulated to the Council Members prior to CEO endorsement.
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Responses to GEF Secretariat Comments

Question	Secretariat Comment	Agency Response
2. Has the operational focal point endorsed the project?	<p>12/30/13 Please re-submit a LOE from Tonga clearly indicating the amount of STAR funding Tonga is allocating to THIS Tonga project (versus the program) and how they are using their flexibility mechanism: e.g. amount of CC STAR transferred to other FAs. The current LOE is not in line with GEF guidelines. Please contact Ms Quynh Phan Xuan from OBS for a country specific LOE model using the flexibility mechanism or assistance.</p> <p>22 March 2016: Addressed. The letter of endorsement has been correctly adjusted regarding the total amount of each FA.</p>	<p>A new LOE was produced by the Government of Tonga on 17th January 2014 showing the current focal area breakdown of the project:</p> <p>BD: USD155,745 LD: USD1,604,147 SFM: USD585,092</p>
3. Is the proposed Grant (including the Agency fee) within the resources available from the STAR allocation?	<p>At CEO endorsement, please ensure: (a) that activities are included in the PIF re. the Small IW increment, consistent with IW Objective 3 under GEF 5; (b) that these activities will support actions towards facilitating adoption of integrated approaches with water-related outcomes through harnessing results and lessons learned from national and local multifocal area activities; (c) that these results and lessons learned will be shared with the regional project "Testing the integration of Water, Land Forest and Coastal Management to Preserve Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods in Pacific Island Countries"</p>	<p>Please note that the project will not be using IW focal area funds. The IW allocation foreseen in the PFD will be used by the parallel UNDP R2R project in Tonga.</p>
4. Is the project aligned with the focal area/multifocal areas/LDCF/SCCF/NPIF results framework and strategic objectives?	<p>9/20/2013 JS CCM</p> <p>No. The project has reallocated CCM funds for LD activities. However, all the CCM related previous activities are still included in the project. Please clarify.</p> <p>22 March 2016: Addressed.</p>	<p>The justification for retaining the piggeries and associated biogesters in the proposal is not primarily because of their contribution to CCM (although this will remain as an incidental benefit), but because they are key elements of integrated community- and farm-level systems which will yield BD, LD and SFM benefits in the following ways:</p> <ul style="list-style-type: none"> - The enclosure of pigs will reduce the land and crop degradation caused by free-roaming animals and will allow farmers to invest in SLM practices such as cover crops and agroforestry without the need for major investment in fencing; - The biogas systems associated with the piggeries will reduce the degradation of forest remnants caused by firewood extraction (especially coastal forests of importance for buffering against climate change impacts), thereby generating SFM benefits in the

Question	Secretariat Comment	Agency Response
		<p>form of reduced emissions from deforestation and degradation, and safeguarded flows of environmental services from forests; as well as BD benefits in the form of reduced loss of priority coastal ecosystems.</p> <ul style="list-style-type: none"> - The use of biodigester residues as fertilizer, instead of inorganic fertilisers that current predominate, will contribute to SLM by increasing soil organic matter and agroecosystem health, as well as contributing to BD by reducing nitrate and heavy metal inputs in runoff and groundwater flows into biologically important coastal and marine ecosystems. <p>Furthermore, the continued inclusion of biogas systems will help to increase the social attractiveness of the project, and the proposed integrated ecosystem management systems, to the participating communities</p>
	22 March 2016: Addressed.	<p>Please note that the project will not be using IW focal area funds. The IW allocation foreseen in the PFD will be used by the parallel UNDP R2R project in Tonga.</p>
	Re. IW: please ensure that: (a) activities, consistent with IW Objective 3 under GEF 5, are included in the CEO endorsement; (b) these activities will support actions towards facilitating adoption of integrated approaches with water-related outcomes through harnessing results and lessons learned from national and local multifocal area activities; and (c) these results and lessons learned will be shared with the regional project "Testing the integration of Water, Land Forest and Coastal Management to Preserve Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods in Pacific Island Countries"	<p>This aspect has now been significantly strengthened, as explained in the introduction to section 1.4.2 of the Project Document on the project's strategy. Here it is explained, inter alia, that:</p> <p>"In accordance with the R2R concept, the project will address the flows of ecosystem services and impacts between different land units and activities at farm, community and landscape levels, such as:</p> <ul style="list-style-type: none"> - The risks of impacts on lagoon and other aquatic/coastal ecosystems caused by land-to-coast flows of nitrates and heavy metals generated through the excessive and inappropriate application of inorganic fertilisers; - The upstream-downstream impacts on water supplies caused by the deforestation of remnant forests located on catchments and recharge areas of steep islands such as 'Eua. - The undermining of the buffering role of coastal forests against the
	6. Is (are) the baseline project(s) , including problem(s) that the baseline project(s) seek/s to address, sufficiently described and based on sound data and assumptions?	<p>9/20</p> <p>Re. Ct 2 While the R2R theme is referenced, the clear links to the theme and consolidated results expected in R2R are totally lacking. Please address and coordinate accordingly with the program's coordinating agency: UNDP</p> <p>Re. Ct 2 While the R2R theme is referenced a little more, the clear links to the theme and consolidate results expected in R2R are still lacking. Please address and coordinate accordingly with the program's coordinating agency: UNDP. The GEF Ridge to Reef publication may also be a good source to consult towards the producing of a strong para. on this project reef to reef rationale, inputs and results expected.</p>

Question	Secretariat Comment	Agency Response
		<p>impacts of salt spray, wave impact and sea level rise, and consequent impacts on agricultural lands and settlements further inland;</p> <ul style="list-style-type: none"> - The landscape-wide implications of the inadequacy of provisions for land use planning and secure tenure, in terms of the pressure on existing land uses and on fragile ecosystems". <p>22 March 2016: Addressed</p> <p>5. Component 3 seems to be a mix of monitoring, protecting remaining natural resources, restoring degraded forest and improving the policy framework: a. Monitoring &“ please provide baseline. Please clearly indicate that inventories will be carried out through co-financing without use of GEF funds. The baseline is not clear.</p> <p>9/20</p> <p>Re ct5a: there is no additional information on page 10</p> <p>22 March 2016</p> <p>5a. Partially addressed. The component 3 has been modified and the aspects related to monitoring moved to component 1. The co-financing provided by the national authorities for the inventories is noted but it still remains unclear where and what is the baseline informed in the document.</p> <p>24 June 2016: Addressed.</p> <p>5b. Protecting remaining natural resources: what this means is not clear. Is it avoiding deforestation. If so how will it be done and what is the baseline activity? Does this relate to existing PA networks?</p> <p>9/20</p> <p>Re 5b: A few general words have been added to the PIF but no real detail, if a claim on avoided deforestation is being made, some rationale behind this is needed</p> <p>The Component structure has been significantly modified to improve clarity and logical flow: aspects related to monitoring have now been moved to Component 1 ("Improving the enabling environment for integrated land and agro-ecosystem management"), as part of Outcome 1.3 "Improved strategic planning of forest resources". The fact that the generation and management of data will be cofinanced has now been made clear in the text related to Output 1.3.2.</p> <p>Response to comment of 22 March 2016</p> <p>Paragraph 143 of the Project Document says “The application of the FMS, including the realisation of forest inventories and the management and use of the resulting data, will be carried out by the Forestry Division; this will form part of the Government of Tonga’s co-financing contribution and ongoing activities in this regard (updating and management of data) will continue to be nationally funded after the project end”.</p> <p>Paragraph 100 of the Project Document has now been reworded to clarify that this monitoring is part of the baseline: “The application of the Forest Management System, including the realisation of forest inventories and the management and use of the resulting data, is carried out by the Forestry Division, which has access to satellite imagery from 1980 for all islands and to the GIS system at the Department of Lands and Survey.</p> <p>The improvement of capacities for forest monitoring will enable hot spots of deforestation, where the greatest pressures of encroachment affecting remaining natural forests occur, to be identified and actions to be prioritized accordingly to avoid their continued deforestation. This may occur through improved land use planning (the monitoring data will be fed to these LUP processes) or increased investment in governance and control. This will benefit remnant forests throughout the country, whether included in PAs or not. This explanation has been</p>
		<p>34</p>

Question	Secretariat Comment	Agency Response
		<p>Response to comment of 22 March 2016 An explanation of the role of Village Development Committees has now been included in Section 1.1.10 of the Project Document on Institutional Arrangements. The influence of local authorities on curbing deforestation will be achieved through the Village Development Committees (VDC) that exist in each community, which comprise the Town Officer (TO) and community representatives. These play a key role in the implementation of community-level directives and policies in each village, including those related to conservation: it is the content of these directives and policies, and particularly their specifications of restrictions on tree felling and land clearance in particular vulnerable areas, that will be prioritized as a result of the improvement of capacities for forest monitoring (Please see new text inserted into paragraph 142, Section 1.3.2 of the Project Document). The interventions proposed by the project, including the reduction in levels of land clearance and the felling of trees for firewood, have been discussed with the VDCs during the PPG phase and received positive feedback.</p>
22 March 2016 5b. Partially addressed. The baseline activity of the local authorities needs to be further explained to understand how the project leads to successfully avoid deforestation. In particular, which actions will be prioritized thanks to the improvement of the capacities for forest monitoring?		<p>24 June 2016: Addressed.</p> <p>6. Land tenure is mentioned in the incremental cost reasoning but not in the descriptions of the components or the project framework. What is being proposed for this needs to be clear in Component 1.</p> <p>9/20 Re Ct 6 land tenure: an explanation of what will be done is needed versus a few general words that tenure affects livelihoods. FAO just published guidance on improving governance of forest tenure: are these the sort of activities being planned?</p> <p>Significantly increased emphasis has been placed on issues of land tenure in the Project Document. The PIF originally focused principally on the technical strengthening of the System for Open Land Administration (SOLA) in order to clarify land tenure and thereby facilitate land use planning; this is still foreseen, under Output 1.1.2. In addition, on the basis of PPG analyses and consultations and a review of FAO experiences at global level, a strong emphasis has now been introduced on the provision of support to site-based capacities for evidence-based negotiation of land use planning, management and tenure rights, which now constitutes the new Component 2. This recognizes that tenure issues are nuanced and multi-stakeholder in nature, often requiring delicate trade-offs between the interests of different stakeholder groups and involving informal agreements on use rights that go beyond the formal prescriptions defined by law.</p>
		<p>22 March 2016: Addressed.</p> <p>7. Forest carbon estimates are very basic. It would be unlikely restoration areas would start with 0 tC so a bit of refinement is necessary. What about other elements of Component 3 e.g. avoiding deforestation (if this is what protecting remaining natural resources means)?</p> <p>Emissions reductions have been calculated using the EX-ACT tool, as presented in Table 9 of the Project Document.</p>

Question	Secretariat Comment	Agency Response
<p>9/20 Re CT 7 forest carbon estimates are still extremely simplistic. Please use FAO's ex-act tool as a means of making this calculation more robust.</p> <p>22 March 2016: Addressed.</p>	<p>Component 2: Please clarify the economic viability of the proposed biogas systems.</p> <p>24 June 2016: Addressed.</p> <p>Please revise the project indicator to align them with the GEF priorities, for example hectares prevented from livestock related degradation etc, amount of energy supplied to a number of households.</p> <p>24 June 2016: Addressed.</p> <p>It is not clear how the component achieves CCM-5 objective, please make this linkage clear using appropriate outputs and indicators.</p> <p>24 June 2016: Addressed.</p> <p>Component 3: To justify CCM-5 funding for the component please add forest carbon assessment and monitoring to the component activities. Please clarify what sustainable forest management including agro-forestry will entail and relate them to the identified drivers of forest degradation.</p> <p>24 June 2016: Addressed.</p>	<p>An analysis of the economic viability of the piggyery/biogas system is presented in Section 1.4.3 and Annex 7 of the Project Document.</p> <p>Outcome 3.2 now includes the following targets:</p> <ul style="list-style-type: none"> - The total area benefitting from reduced degradation over the life of the project will be 245ha. - 130 households will benefit from the use of biogas as energy. <p>Please note that under the flexibility mechanism the project will no longer be using CCM resources.</p> <p>Response to comment of 22 March 2016 This should read Appendix 8, which is where detailed projections of the economic viability of the piggeries are presented.</p> <p>22 March 2016 Component 2: partially addressed. GEF notes the projections of the economic viability of the piggyery/biogester systems shown in Figure 6. Nevertheless, while the detailed explanation of the basis of the calculations is announced in Appendix 7, the Appendix 7 refers to "Project environmental and social (E&S) screening checklist". Please clarify where this detailed explanation is.</p> <p>24 June 2016: Addressed.</p> <p>9/4/2013 JS CCM Please clarify the added value of GEF funded activities for household level biogas activities under component 2</p> <p>24 June 2016: Addressed.</p> <p>Please provide an estimate of CO2e emissions that would be reduced as a result of the project.</p> <p>As explained in response to Comment 4 above, the added value of GEF funded activities will be to demonstrate how biogas digesters can function as part of integrated farm management systems capable of yielding multiple environmental benefits under diverse conditions.</p> <p>Emissions reductions as a result of avoided deforestation are presented in Table 9, based on figures generated through the EX-ACT tool.</p>
<p>7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed?</p>		
<p>8. (a) Are global environmental/ adaptation benefits identified? (b) Is the description of the incremental/additional reasoning sound and</p>		

Question appropriate?	Secretariat Comment 24 June 2016: Addressed.	Agency Response
Please specify, quantify, and refine the GEB at CEO endorsement stage	<p>22 March 2016: Partially addressed. Some GEBs aren't clearly quantified (BD, LD).</p>	<p>Estimates of further CCM benefits expected (despite the fact that the project will not use CCM funds) are presented in Box 5 of the Project Document.</p> <p>Detailed explanations of the GEBs expected under the BD, LD and SFM focal areas are now provided in Section 1.4.4 of the Project Document.</p> <p>Response to comment of 22 March 2016</p> <p>Global BD benefits are described in qualitative terms in Section 1.4.4 paragraphs 199-200 of the Project Document. In order to avoid the need for costly species-specific monitoring, the results of which may be difficult to attribute directly to the project over the project lifetime, forest and tree cover are taken as proxies for BD benefits. Outcome 2.1 has a target of "No new instances of clearance of forests in the watershed for agriculture". Outcome 3.2 has targets of "225 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their farms", and "75% reduction in the amount of fuelwood collected from vulnerable areas", and Outcome 3.3 has a target of "100ha agricultural land returned to forest use in the target localities"; all of these targets are assumed to result in improved BD habitat and ecosystem status.</p> <p>LD benefits are measured through the targets (under Outcome 3.2) of increased application of SLM practices; 75% reduction in the areas of crops damaged by roaming pigs (the total area benefitting from reduced degradation over the life of the project will be 245ha); and 30 farmers in each target locality with 1.5% increases in crop yields over 100ha. These quantitative targets have now been presented in Section 1.4.4 on GEBs; paragraph 196 (LD) and paragraph 199-200 (BD).</p>
9. Is there a clear description of: a) the socio-economic benefits, including gender dimensions, to be delivered by the project, and b) how will the delivery of such benefits support the achievement of incremental/ additional benefits?	24 June 2016: Addressed.	<p>The socioeconomic benefits to be delivered, and the ways in which these will support the achievement of GEBs, are explained in Section B2 above. The socioeconomic benefits will be as follows:</p> <ul style="list-style-type: none"> - Increased crop production and improved local environments in villages where piggeries are installed (under Component 3), as a result of reductions in the damage caused by roaming pigs. - Increases in levels, sustainability and diversity of agricultural production as a result of the application of integrated nutrient management and agroforestry systems. - Access to biogas for cooking and lighting, from the piggy/biodigester systems, reducing the workload of fuelwood collection and expenditures on lamp oil and bottled cooking gas.
		37

Question	Secretariat Comment	Agency Response
		<ul style="list-style-type: none"> - Improved security of tenure, in the form of longer term assured rights to use and manage land, as a result of the multi-stakeholder negotiation processes proposed under Component 2. <p>The delivery of these socioeconomic benefits will directly underpin the delivery of global economic benefits. Specifically, the benefits of the piggery/biogester systems in terms of biogas generation for local use, reductions in crop damage and improved village environments, will provide direct motivations for local communities to adopt these systems, resulting in the parallel generation of GEBs in the form of increased sustainability of land management, reduced impacts on biodiversity and forest resources and (incidentally) reduced emissions of methane.</p>
11. Does the project take into account potential major risks, including the consequences of climate change, and describes sufficient risk mitigation measures? (e.g., measures to enhance climate resilience)	22 March 2016: Addressed	<p>Please add the climate change dimension.</p> <p>As explained in Section 3.3.1 of the Project Document, climate change will pose a risk to the achievement of the project's objective as it may result in the climatic coping limits of the proposed production systems being exceeded (due to increases in temperature, rainfall variability and storm damage); land loss and degradation due to sea level rise, saltwater intrusion and salt spray impacts may also exacerbate productive pressures, and associated degradation, on the remaining land. The project's approach will mitigate these risks by promoting capacities among extension agents and among community members to innovate and adapt the resource management systems they promote or apply, through the use of participatory, adaptive approaches to analysis, learning and technology generation such as farmer field schools. The project's support to negotiated approaches to addressing land use planning and land tenure issues will further enable communities to adapt to CC-related changes in biophysical and demographic conditions.</p>
12. Is the project consistent and properly coordinated with other related initiatives in the country or in the region?	22 March 2016: Addressed	<p>Please provide in text all relevant projects and programs and how they will be coordinated with.</p> <p>Coordination is proposed in detail in Section 3.1.2 of the Project Document</p>
13. Comment on the project's innovative aspects, sustainability, and potential for scaling up.	22 March 2016: Addressed	<p>Please specify, quantify, and refine all these aspects at CEO endorsement stage.</p> <p>These aspects have now been addressed in detail in ProDoc Sections 2.1 (innovativeness), 2.3 (sustainability) and 2.2 (scaling up)</p> <p><input type="checkbox"/> Asses whether the project is innovative and if so, how, and if not, why not.</p> <p><input type="checkbox"/> Asses the project's</p>

Question	Secretariat Comment	Agency Response
strategy for sustainability, and the likelihood of achieving this based on GEF and Agency experience. □ Assess the potential for scaling up the project's intervention.		
17. At PIF: Is the indicated amount and composition of co-financing as indicated in Table C adequate? Is the amount that the Agency bringing to the project in line with its role? At CEO endorsement: Has cofinancing been confirmed?	72% of the co-financing is from the government in kind and is presented as a risk. How realistic is this? Less than 1% of the co-financing is in cash 9/20 A COUPLE OF ADDITIONAL CO-FINANCE SOURCES HAVE BEEN ADDED BUT IS THIS NOT STILL MAINLY THE SAME? Please strengthen co-financing plan, including sources and project management, at CEO endorsement stage	Additional financing has now been negotiated (USD7,170,000 compared to the USD5,400,000 indicated in the PIF, with an increased proportion of "grant" (57%).
18. Is the funding level for project management cost appropriate?	22 March 2016: Addressed OK. Please specify co-financing component	Co-financing for project management is 5% of the sub-total of the components.
23. Has the Agency adequately responded to comments from STAP?	25 March 2016 The response to comment 5 doesn't explain how social barriers to adoption of the alternative approach to raising pigs will be overcome. Please address this comment too.	Response to comment of 25 March 2016 It is the availability of pigs to meet social obligations that is culturally important, rather than the practice of allowing pigs to roam freely. Stakeholders consulted during the PPG phase all considered that it would be socially beneficial to control roaming pigs: currently, these are regarded by all community members as a pest that destroys crops and backyard plants, as well as damaging the environment, sanitary conditions and aesthetic values in the villages. To date there have been many conflicts within the villages, with people killing or injuring pigs that damage their crops, and seek compensation from their owners. Enclosed management would generate major benefits as it would allow community members to plant whatever they want to plant in their home gardens and tax allotments without the risk of pig damage. This explanation has now been added to paragraph 159 (introduction to Component 3) of the Project Document.
	24 June 2016: Addressed	Response to comment of 25 March 2016 Explanation of the project's support to rainwater harvesting has now been included in paragraphs 166-168 (introduction to Component 3) of the Project Document.
	25 March 2016 Please ensure that STAP comments be reflected in the project document and not only in the Annex B (see in particular the comment on rainwater harvesting techniques).	References to the locations in the text where STAP comments are

Question	Secretariat Comment	Agency Response
	24 June 2016: Addressed.	addressed have been included into the response matrix.
6 July 2016: Please provide a table showing that all council comments have been addressed and indicate where is the information in the project document.		21 July 2016: Responses to the Council member comments have been addressed with reference to the relevant part of the project document. A table is provided above.
26. Is CEO endorsement/approval being recommended?	6 April 2015 Not yet. Some comments above still need to be addressed.	Response to comment of 6 April 2016 Please see the responses above.
	6 April 2015 Furthermore, regarding the cofinancing letters: the activity financed by the GIZ under 3.1.2 is not the same as the one in the project document and the letter from the Asian Development Bank does not correspond to any cofinancing resources in table C. Please explain.	Response to comment of 6 April 2016 This is due to a typographical error in the cofinancing letter, which should refer to activity 2.1.3 rather than 3.1.2. The text of the letter does however identify clearly the name of the activity. If necessary, a corrected letter can be obtained from GIZ at a future date, but we hope that this explanation is sufficient to allow the current letter to be accepted at this stage in order to avoid delaying CEO Endorsement. The letter from ADB should not have been included in the submitted package (the Government cofinancing consists partly of ADB funds).
	6 April 2015 Regarding the tracking tools: 1/BD: the date of submission is missing. The area directly covered by the project of 6,180 ha is not reflected in the project document.	Response to comment of 6 April 2016 Please see the added explanation of the 6,180ha figure in the Project Document Section 1.4.4 (new paragraph 200), and the new table 10.
	6 April 2015 2/ LD: The surfaces of the areas focus of the intervention do not appear clearly in the project document. Please establish a clear relation between the TTs and the project document. In particular, but not only, to which concrete activity and the 350 ha SFM correspond in the document?	Response to comment of 6 April 2016 The areas of each of the target areas for intervention are now given in Section 1.2. The areas given in the TTs are now explained in the new Table 10 of the Project Document. As now explained in Table 10 of the Project Document, the 350ha of SFM 1 corresponds to the area of 'Eua watershed forest that will be under improved forest management; this figure also corresponds to the area of tropical moist broadleaf and mixed forestland given in the BD TT
	6 April 2015 3/ Again the figures in the table (areas and tCO2eq) are not always reflected in the project document. Please establish the consistency between the TT and the project document.	Response to comment of 6 April 2016 The new Table 10 now explains the relations between the figures in the TTs and the Project Document.
		Row 76 in the SFM TT (25ha) corresponds to the figure in Table 8 of the ProDoc, described as: "Avoided encroachment on 'Eua. The total land available to Tonga community below the watershed is 75ha, of which 50ha is currently under crop. This means 25ha can be avoided from encroachment and be rehabilitated at the water catchment if the

Question	Secretary Comment	Agency Response
		<p>equivalent amount of land is made available for cropping when pigs stop degradation and ruining of crops.”</p> <p>The tCO2 figure in Row 76 of the SFM TT (22,289t) corresponds with the 4 year balance for deforestation in Table 9.</p> <p>The CO2 figure (30,004t) in Row 75 of the SFM TT corresponds with the total of the other amounts in the 4 year balance column of Table 9 of the ProDoc.</p> <p>The area figure in row 75 of the SFM TT should correspond to the total of the other areas in Table 9 ($70 + 90 + 100 + 155 = 415\text{ha}$), but in fact the figure erroneously given was 395ha. This has now been corrected in the SFM TT.</p>

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS⁶

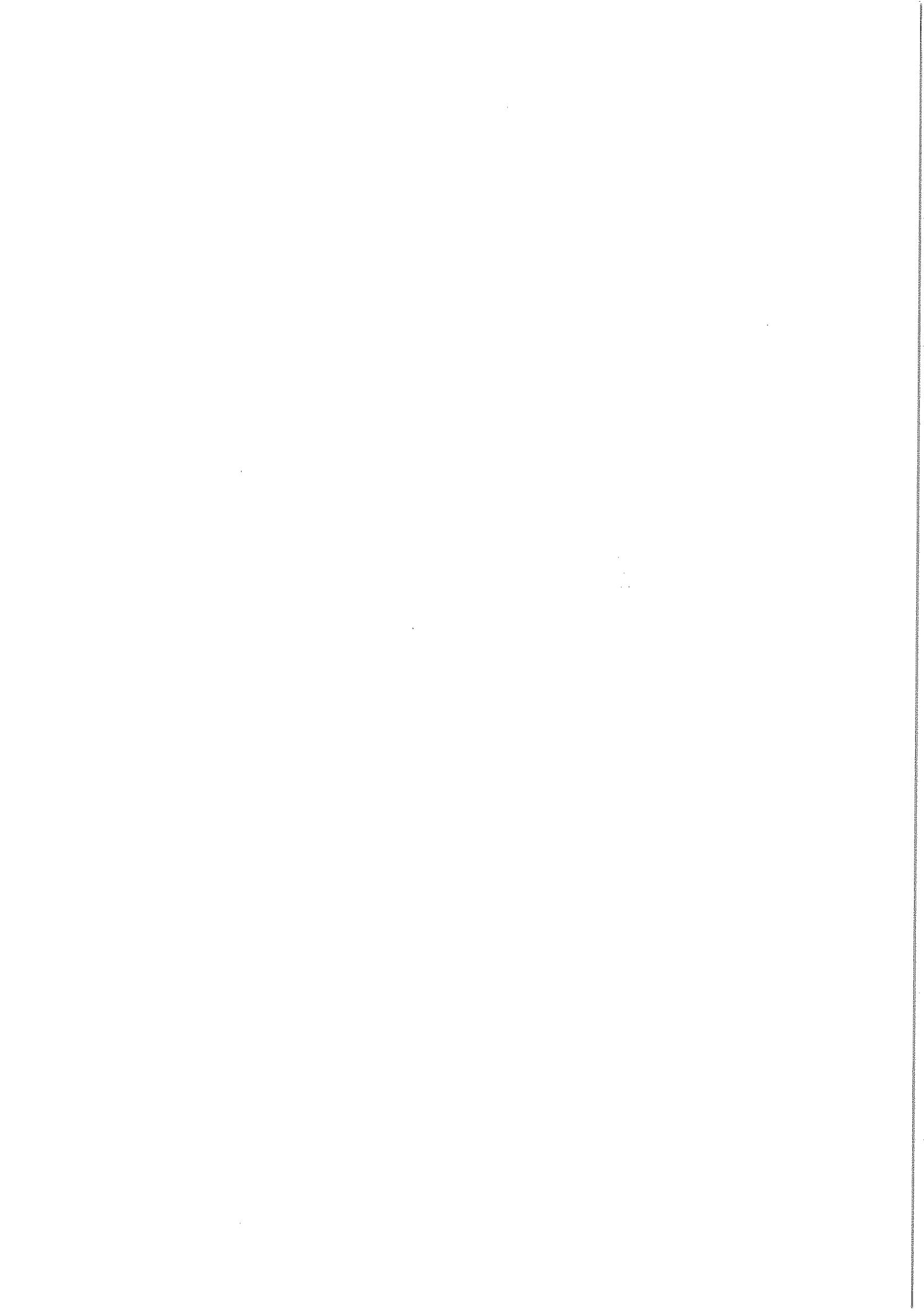
A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

PPG GRANT APPROVED AT PIF: USD 100,000			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF/NPIF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
1. Stakeholder workshop and consultations Activity 1.1: Inception Workshop Activity 1.2: Project team and Project Steering Committee (PSC) Activity 1.3: Local Consultations Activity 1.4: Final Validation Workshop	25,000	25,000	0
2. Collection and analysis of information and elaboration of activities for integrated land and agro-ecosystem management and sustainable forest management Activity 2.1: Collection and analysis of socio-economic and cultural information on project sites Activity 2.2: Collection and analysis of information for development of legal and policy frameworks to support land administration and agro-ecosystem management Activity 2.3: Selection of sites and activities for integrated agro-ecosystem management systems Activity 2.4: Selection of sites and activities for Sustainable Forest Tenure and Management Activity 2.5: Capacity development at national level in land administration and agro-ecosystem management	45,000	45,000	0
3. Consolidation of PPG findings into the project document	30,000	23,984	6,016
Total	100,000	93,984	6,016

⁶ If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent funds, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for activities.

ANNEX D: CALENDAR OF EXPECTED REFLows (if non-grant instrument is used)

NA



FAO/GEF PROJECT DOCUMENT ANNOTATED TEMPLATE

Project Title:	Integrated Land and Agro-ecosystem Management Systems (ILAMS) for Tonga
FAO Project symbol:	GCP/TON/001/GFF
GEF Project ID:	5578
Recipient Country(ies):	Tonga
Executing partners:	Ministry of Agriculture and Food, Forests and Fisheries (MAFFF); Ministry of Lands, Survey and Natural Resources (MLSNR); Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication (MEIDMECCC).
Expected EOD (Starting Date):	1 September 2016
Expected NTE (End Date):	31 August 2020
Contribution to FAO's Strategic Framework: (Indicate as appropriate)	<p><i>a. Strategic objective/Organizational Result:</i> SO2: Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner. Organizational Outcomes 1 and 2,</p> <p><i>b. Regional Result/Priority Areas:</i> Fostering agricultural production and rural development Enhancing equitable, productive and sustainable natural resource management and utilization</p> <p><i>c. Country Programming Framework Outcome:</i> Priority Area A: Policy, Legislation and Strategic Planning and Outcome 2: Strengthened Legislative and Regulatory Framework Priority Area B: Supply Chain Management and Efficiency and Outcome 1: Enhanced sustainable crop and livestock production Priority Area C: Environmental Management and Resilience (including disaster preparedness, emergency response and climate change), and Outcome 3: Sustainable management and conservation of land resources and biological diversity.</p>
Contribution to GEF TF Focal Area Strategic Objectives and Programs:	<p><i>Biodiversity (BD-2)</i> - Mainstream biodiversity conservation and sustainable use into production landscapes, seascapes and sectors</p> <p><i>Land Degradation (LD-1)</i> - Agriculture and Rangeland Systems: Maintain or improve flow of agro-ecosystem services sustaining the livelihoods of local communities</p> <p><i>Land Degradation (LD-3)</i> - Integrated Landscapes: Reduce pressures on natural resources from competing land uses in the wider landscape</p> <p><i>Sustainable Forest Management (SFM-1)</i> - Reduce pressures on forest resources and generate sustainable flows of forest ecosystem services</p>
Environmental and Social Risk Classification	low risk <input checked="" type="checkbox"/> moderate risk <input type="checkbox"/> high risk <input type="checkbox"/>
Gender Marker	G0 <input type="checkbox"/> G1 <input checked="" type="checkbox"/> G2a <input type="checkbox"/> G2b <input type="checkbox"/>
Financing Plan:	
GEF/LDCF/SCCF allocation:	USD 2,344,954
Co-financing:	Ministry of Finance and National Planning Secretariat of the Pacific Community MORDI Trust Oxfam GIZ FAO Tupou College Hango Agricultural College
Sub-total co-financing:	USD 7,170,000
Total budget:	USD 9,514,954

Executive Summary

Biodiversity and land resources in Tonga are subject to a range of interrelated threats, including:

- **Free roaming livestock:** free roaming pigs cause significant damage to crops, land degradation (through soil compaction, removal of soil vegetation cover and gullying, leading to erosion and consequent downstream impacts on reef and lagoon ecosystems), damage of coastal ecosystems such as mangroves through foraging, and also hinder the application of sustainable land management practices.
- **The intensive production of export crops, such as the recent boom** of squash cultivation which has involved unprecedented tree removal, the indiscriminate use of fertilisers and pesticides (leading to contamination of adjacent lagoon ecosystems) and the intensive use of mechanical tillage (leading to physical soil degradation and the loss of organic matter);
- **Forest clearance for subsistence or smaller scale commercial agriculture**
- **Alteration of traditional fallow systems**, resulting in degradation of soil nutrient status.

These threats arise from a combination of cultural traditions (in the case of free roaming livestock), economic development pressures (in the case of export cropping) and demographic changes, especially the migration of population to the main island of Tongatapu which is causing localized land pressures.

The nature of these threats and the relations between them mean that they need to be addressed from an integrated perspective at both farm “agroecosystem” and landscape-wide “ridge to reef” levels. At present, however, regulatory and policy instruments do not adequately support this approach; land use planning is not adequately based on reliable information on the status of natural resources and tenure; stakeholders are not able to resolve tradeoffs between their needs and interests in a negotiated manner; and there are inadequate capacities in Government and among land managers for the support and implementation of sustainable land management practices adapted to biophysical, socioeconomic and tenure conditions.

The project will address this situation by:

- Improving the enabling environment for integrated land and agro-ecosystem management (Component 1)
- Developing site-based capacities for evidence-based negotiation of land use planning, management and tenure rights (Component 2)
- Strengthening of capacities for the formulation, dissemination and support of sustainable land management practices with an integrated R2R approach (Component 3)
- Effective knowledge generation and dissemination, and monitoring and evaluation (Component 4).

The project will work at field level in four target localities, on the islands of Tongatapu, ‘Eua, Vava’u and Ha’ano, which have been selected and defined in order to maximize the potential to deliver replicable lessons and global environmental benefits, and to apply the “ridge to reef” concept. The management practices to be promoted will include the enclosed management of pigs (aimed at reducing damage to land and crops), linked to biogas systems (which will generate organic fertilizer and reduce firewood collection pressures, while delivering socioeconomic benefits in the form of clean energy), integrated nutrient management (such as the use of biogas digestate as fertilizer, and cover crops) and agroforestry systems (which will improve nutrient cycling, reduce firewood extraction from forest remnants and generate tree products).

The project is one of two priority projects in Tonga and forms part of the regional umbrella program “Pacific Islands Ridge-to-Reef (R2R) National Priorities: Integrated Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods”, and will contribute to its goal of maintaining and enhancing 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. It will complement the country’s other project under the R2R programme, the UNDP/GEF project “R2R Integrated Environmental Management of the Fanga’uta Lagoon Catchment”.

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ACRONYMS

ADB	Asian Development Bank
AFA	Administration and Finance Assistant
APEC	Asia Pacific Economic Cooperation
AWP/B	Annual Work Plan and Budget
BD/LD/SFM	Biodiversity/Land Degradation/Sustainable Forest Management
BH	Budget Holder
CBD	Convention on Biological Diversity
CC	Climate Change
CCA	Climate Change Adaptation
CEO	Chief Executing Officer (GEF)
CPF	FAO Country Programming Framework
CSD	Cooperate Services Division
DIPECHO	Disaster Preparedness Programme of the European Commission Humanitarian Aid Department
DoE	Department of Environment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECC	Environment and Climate Change (portal)
ECHO	European Commissions Humanitarian Aid Department
EIA	Environmental Impact Assessment
EP	Executing Partner
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FE	Final Evaluation
FP MIS	Field Project Management Information System
FPO	Field Project Officer
GCP	Government Cooperative Programme
GDP	Gross Domestic Product
GEBs	Global Environmental Benefits
GEF	Global Environment Facility
GEFSEC	GEF Secretariat
GHG	Greenhouse Gas
GIS	Geographic Information Systems
GIZ	German Corporation for International Cooperation
GoT	Government of Tonga
HH	Households
HQ	Headquarters
HTFA	High Temperature Forced Air
IDNDR	International Decade for Natural Disaster Reduction
IFAD	International Fund for Agricultural Development
ILAMPs	Integrated Land and Agro-ecosystems Management Plans
ILAMS	Integrated Land and Agro-ecosystems Management Systems
IUCN	International Union for Conservation of Nature
JNAP	Joint National Action Plan
LGIS	Land and Geospatial Information Systems
LoA	Letters of Agreement
LTO	Lead Technical Officer
M&E	Monitoring and Evaluation
MAFF	Ministry of Agriculture, Food, Forestry and Fisheries

MCTL	Ministry of Commerce, Tourism and Labour
MDT	Multi-Disciplinary Team
MEIDECC	Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication
MFNP	Ministry of Finance and National Planning
MIA	Ministry of Internal Affairs
MLSNR	Ministry of Land Survey and Natural Resources
MOI	Ministry of Infrastructure
MORDI	Mainstreaming of Rural Development Innovation
MOU	Memorandum of Understanding
MTE	Mid-Term Evaluation
MTR	Mid-Term Review
NAMA	National Appropriate Mitigation Actions
NAPs	National Adaptation Plans
NAPA	National Adaptation Plan of Action
NIPs	National Implementation Plans
NBSAP	National Biodiversity Strategic Action Plan
NFP	National Forestry Policy
NGO	Non-governmental Organization
NPC	National Project Co-ordinator
NPD	National Project Director
NRD	Natural Resources Division
NSDF	National Sustainable Development Framework
OIC	Officer in Charge
PCG	Partner Coordination and Support Group
PHAMA	Pacific Horticultural Agricultural Market Access Program
PICTs	Pacific Islands Countries and Territories
PIF	Project Identification Form (GEF)
PIR	Project Implementation Review
PPG	Project Preparation Grant (GEF)
PM	Project Manager
PMC	Project Management Committee
PMES	Project Monitoring and Evaluation Specialist
PMO	Project Management Office
PMU	Project Management Unit
PPPO	Plant Production and Protection Officer
PPR	Project Progress Report
PRODOC	Project Document
PSC	Project Steering Committee
PT	Project Team
PTC	Project Technical Chief
PTF	Project Task Force
PTM	Project Task Manager
PUMA	Planning and Urban Management Agency
PY	Project Year
R2R	Ridge-to-Reef
RAP	Regional Office for Asia and the Pacific
RBM	Results Based Management
SAPA	FAO sub-Regional Office for the Pacific Islands
SFM/REDD	Sustainable Forest Management/Reduction of Emissions from Deforestation and Degradation of Forests

SLM	Sustainable Land Management
SMART	Specific, Measurable, Appropriate, Realistic and Temporary
SOLA	Solutions for Open Land Administration
SOPAC	Geoscience Division of the SPC
SPC	Secretariat of the Pacific Community
SPCR	Strategic Programme for Climate Resilience
SPREP	Secretariat of the Pacific Regional Environment Programme
STA	Senior Technical Adviser
STABEX	Export Stabilisation
STAP	Scientific and Technical Advisory Panel (GEF)
TAG	Technical Advisory Group
TASP	Tonga Agricultural Sector Plan
TCI	Investment Centre Division (FAO)
TERM	Tonga Energy Road Map
TMO	Tonga Meteorological Service
TOP	Tongan Pa'anga
TOR	Terms of Reference
ToT	Training of Trainers
TTs	Tracking Tools
TRIP	Tonga Rural Innovation Project
TSCR	Trade Standards Compliance Report
TSDF	Tonga Strategic Development Framework
UNDP	United Nations Development Programme
USD	United States Dollar
VAC	Village Agriculture Committee
VCO	Virgin Coconut Oil

SECTION 1 – PROJECT RATIONALE

1.1 OVERVIEW OF THE PROJECT CONTEXT

1.1.1 Background

2. The Government of Tonga held an Economic Dialogue in March 2012, to which FAO was invited. One of the four strategies and specific actions recommended to reversing the decline in agriculture included the need for sustainable management of natural resources. Key priority actions include;

- Strengthening local capacity for integrated management of agricultural and natural resources to maximize benefits
- Supporting the enforcement and development of agriculture and natural resource regulation and policies to improve the productivity and sustainability of the resource base, including damages from roaming pigs, which need urgent action.

3. This project will be one of Tonga’s two “child projects” within the multi-agency regional programme entitled “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” (hereafter abbreviated as the R2R Programme).

4. The two national R2R projects proposed by the Kingdom of Tonga under the Pacific Islands R2R programme aim to build the resilience of Tongan communities to the impacts of climate change and to strengthen institutional capacity for adopting integrated approaches to the management of land, water, terrestrial and marine biodiversity. The two national projects are: (i) Integrated environmental management of Fanga’uta Lagoon Catchment, which is implemented by UNDP and places focus on improving the management of ecosystem services in an existing protected area; and (ii) this FAO implemented project on Integrated Land and Agro-ecosystem Management Systems (ILAMS).

5. The R2R Programme covers 14 Pacific island states (Cook Islands, FS Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu) and has as its goal “To maintain and enhance Pacific Island countries’ (PICs) 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”.

6. The recently completed United National Development Assistance Framework (UNDAF) for the Pacific Region (2013-2017) provides the context for the R2R Programme. It recognized that the general challenge for the Pacific Island Countries (PICs) is to ensure the sustainable management of their terrestrial and marine natural resources and heritage, from the regional to the local level, and the adaptation of individuals, communities and states to climate and environmental change and natural hazards, as well as to be well prepared to respond to natural disaster events and population related consequences.

7. The project is developed in accordance with the goal of the 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 realise the overall goal, each of the involved Pacific Islands countries adopts specific aspects of R2R to address national priorities and development needs while delivering global environmental benefits in line with the applicable GEF focal area strategies.

1.1.2 General geographical context

8. The Kingdom of Tonga comprises 170 islands of volcanic and coral origin spread over an ocean area of around 360,000 km². There are four main islands groups: Tongatapu and ‘Eua, Vava’u, Ha’apai and the remote Niuas (see Figure 1). Tonga has a 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 Niuas (71 km²). The largest of these is Tongatapu on which Nuku’alofa the capital is located, and where about 70 percent of

the total population resides.

Table 1. Key Country Data.

Land Area (km ²): 747	Sea Area/EEZ (km ²): 700,000
Population (No.): 103,036 (2011 Census)	Annual Growth (percent): 0.2% (2006-2011)
Density (inhabitants/km ²): 130 (2010)	Rural Population (percent of total population): 57 % (2006)
GDP (US\$ million): 348 million (2010)	GDP per caput (US\$): 3,370 (2010)
GDP Real Growth (average 2001-2010): 1.4% per annum	Primary Sector GDP (% of total GDP): 19.9 % (2010)
Trade Balance: -US\$142,368,000 (exports as a % of imports: 5.3 %; Imports as % GDP -31% (2010))	Food as percent of total imports: 14.7 % (2010)
Budget allocation MAFFF: less than 2 % (2007)	Human Development Index (HDI): 0.705, position 100 out of 187 countries (2013)

9. The Tongan archipelago lies roughly in a North - South direction. The soils of Tonga are derived from a mixture of volcanic ash and coral. Because island groups are isolated from each other, and are physically and economically different, the country is described in four parts in terms of soils and topography¹: Tongatapu island is mainly flat, with a few small hills rising to about 30 m, and with a coral base covered with around 3 m of volcanic ash; 'Eua island is a high volcanic island with soils derived from andesitic tephra overlying tuffaceous materials and/or coral; Ha'apai is a group of 43 coral islands, 18 of which are permanently inhabited, with very low topography and coraline soils; and Vava'u group originated from raised coral with characteristic terraced silhouette and appear to be 3-tiered, a maximum elevation of 213 m, and soils developed largely on a substantial mantle of volcanic ash, up to 9 m thick, overlaying the coral limestone.

1.1.3 Climate

10. Climate: The climate of the Tonga archipelago is tropical maritime mild to warm, humid and moderately wet throughout the year, with a mean annual rainfall varying from approximately 1,728mm on Tongatapu and 2,280mm on Vava'u. Table 2 depicts basic climatic data for the four main regions from 1996 - 2013.

Table 2. Mean Annual Temperatures and Total Rainfall for the Main Island Groups

Division	Mean Annual Temperatures (in °C)	Total Annual Rainfall (mm)
Tongatapu	24.8	1728
'Eua	24.2	1750
Ha'apai	25.6	1780
Vava'u	26.9	2280

Source: www.met.gov.to

11. There is a marked seasonality in the Tongan rainfall with two main seasons. The rainy season is characterised by a mean monthly annual rainfall of up to 250mm and an average monthly temperature of more than 26 °C. The "hot wet season" lasts from November to April, and about 65 percent of the total annual rainfall occurs during the wet season. The "cool and dry season" is from May to October, and has a mean monthly rainfall of less than 130 mm and lower temperatures of around 22°C. High humidity occurs throughout the year. The annual mean humidity ranges from 77 percent in Tongatapu to 79 percent in Vava'u. The prevailing winds are Southeast Trades winds, which dominate during the months of May to October, a period when rainfall is lowest and when periodic water shortages occur, especially in the warmer season. Tropical cyclones also occur frequently. The cyclone season for Tonga runs from December through to April although deviations outside this period occur.

¹ <http://www.fao.org/ag/agp/agpc/doc/Counprof/southpacific/Tonga.htm>

1.1.4 Biodiversity

12. 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.

13. 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, 1,139 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.

14. In addition to natural forest, Tonga has mangrove/coastal forest cover estimated at 336 ha in 2012, of which 115 ha is in Nukuhetulu on the Fanga'uta Lagoon in Tongatapu².

15. Tonga has created a total of 22 Protected Areas, covering 171.21 km² of land area (or 15.89% of total land area), and 10,055.42 km² of marine area (or 1.51% of total marine area).

16. In Tonga, for example, there are over 50 species of sacred or fragrant plants, known as '*akau kakala*', that are central to the spiritual and economic fabric of Tongan society and that are planted or protected as integral components of Tongan agroforestry.³

1.1.5 Population

17. **Population distribution:** The geographical distribution of the population in the main island groups is shown in Table 3. The 2011 population census reported a total population of 103,036 broken down into 51,979 males and 51,273 females. It was recorded that 70.6 percent of the total population were residing in the main island, Tongatapu, 15.2 percent in Vava'u, 7.4 percent in Ha'apai, 5.1 percent in 'Eua and 1.6 percent from the Niwas. The average population density for the Kingdom was 150 persons per square kilometre, which is high compared to other islands in the Pacific, although it varies considerably over the Kingdom.

18. **Population trends:** National population almost doubled (an 82% increase) between 1956 and 2011 (Table 3). Since 1976, however, there has been a significant slowing down of growth rates, to only around 0.2% in the 2006-2011 inter-census period. All regions apart from Tongatapu showed negative growth in the 2006-2011 period, and three of these also showed negative growth in the previous 10 years (1996-2006).

Table 3. Population trends by region, 1956 to present

² Kingdom of Tonga Fifth National Report to the CBD, Review of Tonga's National Biodiversity and Action Plan – Fifth Report (2014)

³ <http://archive.unu.edu/unupress/unupbooks/80824e/80824E03.htm>

Region	1956	1976	Annual %	1996	Annual %	2006	Annual %	2011	Annual %
Tongatapu	31,264	57,411	4.2	66,577	0.8	72,045	0.8	75,416	0.9
'Eua	1,925	4,486	6.7	4,924	0.5	5,206	0.6	5,016	-0.7
Ha'apai	9,918	10,792	0.4	8,148	-1.2	7,570	-0.7	6,616	-2.5
Vava'u	12,497	15,068	1.0	15,779	0.2	15,505	-0.2	14,922	-0.8
Niua's	1,254	2,328	4.3	2,018	-0.7	1,665	-1.7	1,282	-4.6
Total	56,858	90,085	2.9	97,446	0.4	101,991	0.5	103,252	0.2

1.1.5 Land use

19. Data on land use in Tonga are 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)⁴, (iv) mangroves and wetlands (saline and estuarine), and (v) other land uses. Table 4 shows the land use in hectares by each type during 2006 and 2009.

Table 4. Types of Land Use in 2006 and 2009.

Type of Land use	Estimated area in 2006 (ha)	Estimated area in 2009 (ha)
Woodland	8,000	6,459
Plantations	800	501
Agricultural/coconut lands	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

1.1.6 Economy and Natural Resource-Based Production Sectors

20. Tonga has a small, open economy with a narrow export base largely comprised of agricultural goods. The combined agriculture, forestry and fisheries sectors are recorded to account for about 28% of GDP. The country runs a deep trade deficit which has been increasing in recent years. At present, the total value of merchandise imports is almost 16 times higher than the total exports; although the country retains a strong subsistence base it imports an increasing proportion of its food⁵. The country remains dependent on external aid and remittances from Tongan communities overseas to offset its significant trade deficit. Tourism is now the second-largest source of foreign currency earnings following remittances.

21. **Agriculture:** Agriculture sector remains the single most important sector in the Tongan economy (accounting for around 19% of GDP) and primary production provides livelihood for over 58% of the economically active population. Its role is manifested in several ways - as a source of food, as a source of employment, as a source of cash income, as a source of foreign exchange and a source of raw materials for processing. The next two important sectors are the Government sector (12% of GDP) and the Commerce, Restaurants and Hotels sector (13%). The manufacturing sector contributes only about 3% and consists of handicrafts and a few small scale cottage industries.

22. Commercial production and exports are dominated by a few primary products, including melon, squash (which accounts for around half of total exports), root crops, vanilla and fish, making the economy

⁴ Described in Table 1 of the 4th National Report as “coconut (grassland, shrubland and cropland)”; the report later refers to this as agricultural land (“agricultural lands have increased from 70% or 48,000 ha in 2006 to 75% or 51,100 ha in 2009, of which 74% is covered with coconuts”).

⁵ Total merchandise imports of animal, vegetable and processed food products amounted to about T\$86 million in 2010 (Annual Foreign Trade Report for 2010, Tonga Statistics Department).

vulnerable to changes in export markets.

23. **Forest sector.** Tonga has limited forestry resources, with only about 8,000 hectares or less of natural forests, which are located chiefly on uninhabited islands and on slopes that are too steep for cultivation. 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.

24. There is considerable potential for agro-forestry development, with 48, 000 hectares of potential agro-forestry land, which at present is mainly planted with coconuts. The forests and forest industries are estimated in the National Accounts to be making a small (<1 percent of GDP), but this is considered to be an underestimation of the important contribution to sustainable development that forestry is contributing to, such as providing ecosystem services. Trees are a vitally important part of the agricultural and environment developmental nexus. Careful planning and management of the use of the forests is important to ensure that the values supplied by forests are not jeopardized by unsustainable development. A critical area is the protection of vulnerable water resources, soils and biodiversity.

25. 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.

26. 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 and 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.

27. **Fisheries:** Commercial reef fish catches are made by spear fishing, hand-line fishing, gill and drive-in netting and from fish corrals. The commercial reef fisheries in Tonga are structured around small-boat operators who employ a number of fishermen and take the major share of the catch revenue. Spear fishing and net fishing are conducted on the reefs around Tongatapu⁶.

1.1.7 Land Tenure

28. Land is the most important productive asset in Tonga, to which the livelihoods of most Tongans are intimately tied for their immediate subsistence and cash needs. The country has a unique land tenure system, which is a strong determinant of land management practices. Under this system, which is based on the 1875 Constitution and the subsequent Land Act of 1882, there are four land ownership categories: the King's estates, the Royal Family's estates, the estates of the nobles and chiefs, and Government land. These lands are inalienable.

29. In accordance with the 1882 Land Act, access to land by the rest of the population (the "commoners") is in the form of usufruct rights on "allotments" ceded on nobles' or Government land. Each male Tongan of taxpaying age sixteen has the right to be granted a gardening or "tax" allotment ('api tukuhau) of 3.34ha, which is heritable in the male line, and a smaller dwelling known as a town allotment ('api kolo) of 0.16ha. A majority of commoners live on the hereditary nobles' estates Table 5

⁶ Tongan reef fisheries have been described by Halapua (1982) and more recently by Tu'avao et al. (1994).

summarises the land status in Tonga.

30. A third tenure modality is leasehold: under the 1976 modification to the Land Act, commoners were granted the ability to lease out their tax allotments for up to 10 years (town allotments for up to 99 years).

Table 5. Land Distribution Status in Tonga.

Land status	Percentage of Total
Allotment	62.8%
Unallocated Government land	11.4%
Unallocated noble's land	6.9%
Leases	8.4%
Small islands, lakes, lagoons	10.5%
Total	100.0%

Source: Land Survey report, 2006

31. The reality of land tenure does not necessarily correspond to these three legally recognised modalities. Population growth in certain areas (particularly Tongatapu) means that there the government can no longer provide the statutory allotment owed to each person. Most males entitled to tax allotments live overseas or away from their villages. Even when an allotment is allocated to a commoner, it may be difficult formally to register it, as the noble on whose estate it lies and whose signature is required for registration may wish to retain control over the land and to have the opportunity to lease it to others, such as foreign investors.

32. These legal and factual issues have caused an informal market in land tenure to appear. Beginning around the first half of the twentieth century, Tonga's commoners have "bought" and "sold" allotments illegally to others, although what they are really doing is buying the landholder's right to use the allotment. Though this market can provide commoners with income, it falls far short of providing the benefits that institutionally recognized land rights could bring⁷.

1.1.8 Farming systems

33. **Traditional Farming Systems:** Of an estimated 42,000ha of arable land in the country, around 42% is currently farmed. Traditional agriculture is based on small holding of 3.3 hectares and is largely rain-fed. Root crops (yam, taro, sweet potatoes, alocasia-kafe and cassava) dominate the cropping system and these crops occupy an estimated 28 percent of the farmed land. Root crops are principally for domestic consumption, but export is gaining significant importance in recent years, with an increasing volume of export (particularly yam, taro, cassava and kafe or *Alocasia macrorrhiza*). Common fruit tree crops in Tonga are: coconuts, different kinds of banana and plantains, breadfruits mango, papaya, pineapples, watermelons, Pacific Litchi, Pacific Plum, avocado, Canarium nut-Ai, and Citrus which is a major staple for Tongans. Currently, there are no "commercial" fruit orchards and domestic production of fruits is mostly for local consumption.

34. In addition to traditional cropping, pigs and chicken also play a significant role in the agricultural system and the most important animals kept by Tongan smallholders in terms of nutritional significance and importance as they play a valuable role in the many religious/traditional/national obligations of families.

35. Makino (1993) distinguishes four main forms of agroforestry systems in Tonga:

1) Traditional agroforestry systems – home garden style

36. This system is primarily subsistence oriented, providing diverse products for household use including food, medicines, clothing materials and firewood; any surplus may be sold in local markets. The system is dominated by trees, under the canopy of which grow various crops and useful plants which farmers are able to harvest throughout the year, including staple crops such as giant taro, yam and taro, kava (of

⁷ Harter Kennedy, K. (2012): Why Land Tenure Reform is the Key to Political Stability in Tonga. Pacific Rim Law & Policy Journal Association

cultural importance as well as being a cash crop) and paper mulberry (source of the fibre used for *tapa* clothing material).

2) Traditional agroforestry system – slash and burn

37. This system is more focused on crop cultivation and less on forest products, and is aimed at both household consumption and local markets. Cropping is staggered (time-dominant) but the system also includes some spatially-integrated permanent light canopy tree species, such as coconuts and papaya. The system involves sequential planting of root crops, starting with yam, taro and/or kava, followed by giant taro, taro, plantain and/or kava, and then finally cassava before the land is left to lie fallow. During the earlier stages, the land is intensively cultivated and kept largely weed-free, but during the final cassava stage trees are allowed to regenerate naturally and then to develop fully during the fallow phase.

3) Commercial agroforestry – combination of traditional and modern systems

38. This system is primarily aimed at cash cropping, which features the use of agricultural machinery (tractors and ploughs) as well as agrochemicals (mainly fertilizers). Products that are not up to market quality are typically fed to pigs or used for household consumption. Crop selection depends on the demands of national and international markets, with squash being the dominant crop at present. This is typically grown (for a 4-6 month period each year) in association with coconuts, which are planted in rows to facilitate ploughing. Coconuts are collected for domestic use, local markets, pig food and in some cases for export.

4) Urban agroforestry – home garden style

39. This system has gained importance among people who have moved to urban areas for employment and whose own farmland is on their home islands and so difficult to access. This system features diverse tree species (of medicinal and other use value) integrated spatially with a number of different root crops and vegetables such as tomato, potato and eggplant.

40. Farming and land use patterns vary between different socioeconomic groups (Table 6).

Table 6. Variations in farming and land use patterns by socioeconomic group

Farmer type	Farming areas managed	
	Tenure/occupancy situation	Production systems
Large, well-off farmers with substantial income from commercial agriculture	Formal land ownership	Traditional agroforestry (home garden + slash and burn)
	Rental from relatives	Commercial agriculture
	Rental from government	Commercial agriculture
Farmers with limited income, dependent on income from manual labour	Formal land ownership	Traditional agroforestry (home garden + slash and burn)
	Rental from relatives	Commercial agriculture
Urban dwellers	Formal land ownership	Urban agroforestry (home gardens)

1.1.9 Gender considerations in relation to natural resource management

41. The traditional cultural view that agriculture is not part of the role of women is still widely held. However, over time a unique role has evolved for women, who now play an important supporting role to men in agricultural development. Most women are directly involved in the planting and maintenance of pandanus and paper mulberry for handicrafts. Women have traditionally worked in groups to produce mats and *tapa* (traditional cloth made from paper mulberry bark), and each village has one or more such groups. Handicrafts have traditionally been produced for home use, ceremonial purposes and traditional exchange, but these products have increasingly taken on a monetary value, and become an important source of income (in both cash and kind) for some families. Women's' groups also organize sales, or exchange of their products (*katoanga*), with overseas groups, or within Tonga. The usual approach is to negotiate sales with other groups for cash or kind (such as furniture, linen, and kitchen equipment).

42. In addition, women are increasingly involved in agro-forestry development, particularly in the

cultivation of cultural and medicinal plants and ornamentals for home beautification. They also play a significant role in the pollination, trading and curing of vanilla, and in Tongatapu women are also highly involved in squash cultivation, harvesting and processing.

43. Women are also involved in fishing activities, confined mainly to inter-tidal areas near shore, to feed their families and as alternative means of earning income. Marine invertebrates, such as octopus, shellfish, sea urchins, mangrove crabs, and reef fish form a significant portion of these women's catch. These are a major source of cheap protein for home consumption, and are also a source of income for some households.

44. Women bear prime responsibility for household-related activities, including cooking and the collection of firewood, which is becoming increasingly difficult and time consuming. There are very few income-earning opportunities available to Tongan women in rural areas, who often have a very limited educational background; the knowledge and skills they have with regards to their fishing-related roles, for example, are not easily transferred to other types of occupations.

1.1.10 Institutional framework

45. Government structure: Tonga is a constitutional monarchy with two levels of government, local and national. There is no constitutional provision for local government. The district officer and town officer are elected by popular vote every three years and report directly to the prime minister's office, or the governor in the case of Ha'apai and Vava'u divisions. The town officer is empowered to call a normal fono (a community meeting to discuss matters of priority) and also a 'grand fono' where the Minister of Internal Affairs or other government official may address the people⁸.

46. The following government ministries are relevant to the proposed project.

47. Ministry of Agriculture & Food, Forests and Fisheries (MAFFF): MAFFF core functions include (i) Sustainable management of land, water and genetic resources and improved responses to global environmental challenges affecting food and agriculture; (ii) Regulate enabling environment for agricultural investment and marketing to improve livelihoods and rural development; (iii) Increased more effective public and private investment in agriculture and rural development; and (iv) Improved quality and safety of food at all stages of the food chain. Since agriculture is the dominant land use in Tonga, MAFFF plays an important role in ensuring the sustainability and profitability of agricultural lands in the Kingdom and responsible for the exploitation and conservation of natural resources. The main divisions with relevant activities to ILAMS include the;

- Forestry Division to provide effective development /technical support to commercial forest/trees plantations and conservation management of the nation's forest and trees resources in a sustainable manner.
- Research and Extension Division is to support the achievement of MAF's objectives through participatory approach in the development and appropriate agricultural production technologies.
- Extension and Women Division which provides agricultural extension service, and through effective delivery and dissemination of appropriate scientific knowledge, information for commercial production and development. It also promoted women development programme for home gardening and food nutrition.
- Livestock Division function is to ensure supply of quality and safe food from animal and animal product for national consumption and provide effective development /technical support of commercial livestock production and management of animal health services.
- Quarantine and Quality Management Division which concentrates on preventing the introduction of plant pests or diseases from abroad that could have devastating effects on the local environment and the quarantine treatment of commodities.

48. Ministry of Land Survey and Natural Resources (MLSNR): The Ministry of Lands, Survey and Natural Resources (MLSNR) is responsible for administering all lands issues in the Kingdom of Tonga. This includes

⁸ http://www.clgf.org.uk/userfiles/1/file/Tonga_Local_Government_Profile_2013_CLGF.pdf

management of land titles, survey and geospatial information, sustainable natural resources and environmental protection. The MLSNR 2015/2016 – 2017/2018 Corporate Plan highlighted the overarching objective of the Ministry to endeavour to effectively and efficiently serve Tonga with the management of all Tongan land, and natural resources. The main divisions with relevant activities to ILAMS include the;

- Land Management Division: is responsible for: (a) lands and natural resources legislations and regulations to facilitate investments; (b) digitization of cadastral and geodetic information; update the geographical, hydro-geological information; (c) improving the administration of land titles ensuring rightful owner; and (d) enforcement of its legislations and regulations for the sustainable management of lands and natural resources and strengthen the resilience of the communities to natural hazards.
- Land Information Division hosts the Land and Geospatial Information Systems (LGIS) Unit, which has as its core functions: (a) GIS applications for supporting disaster, risk and hazard management; and (b) providing GIS monitoring system and expert analysis for Environment and Climate Change.

49. The MLNSR works with the DOE and MAFFF to through having areas set aside as reserve lands under the Lands Act and subsequently using the appropriate laws, for example the National Parks Act, to convert the reserve land into a protected area of some category.

50. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication (MEIDECC): MEIDECC is a new Ministry that manages and coordinates all energy related areas within the government but not limited to electricity, oil and renewable energy; manage, protect and preserve the environment; manage the effect of climate change on the environment; provide with relevant plan and activities on how to prepare and address any impact of natural disaster; manage all means of communication within Tonga. The main departments with relevant activities to ILAMS include the;

- Department of Environment (DoE) is the central authority that coordinates and supervises applying of environmental legislation and implementation of policies, strategies and plans for environmental protection; planning/co-ordination, conservation areas management, conducting hazardous/solid waste awareness, coordinating regional, global environmental issues and environmental conventions activities in Tonga.
- Climate Change Department has the responsibility to increase resilience of Tonga and its environment to climate change impacts and to phase out the ozone depleting substances in the country. The major activities include the development and implementation of Joint National Action Plan (JNAP) on climate change adaptation and disaster risk management, greenhouse gas inventory, vulnerability and adaptation, national communication, and ozone Layer Protection.

51. Perhaps the most relevant activities of MEIDECC to ILAMS are those under its Environment and Climate Change (ECC) programmes and objectives, in particular the development and ongoing management of Tonga's Environment and Climate Change portal (www.ecc.gov.to).

52. At community level, Village Development Committees (VDC) play a key role in the implementation of community-level directives and policies in each village, including those related to conservation. VDCs exist in each community, and comprise the Town Officer (TO) and community representatives.

1.1.11 Policy framework

53. The following national policies and plans are relevant to the proposed project.

Tonga Strategic Development Framework (TSDF) 2015-2025

54. The TSDF 2015-2025, has been completed and designed with a stronger results focus in line with the approaches used for projects and corporate plans. TSDF sets the impact of "a more progressive Tonga supporting a higher quality of life for all" and focus will be four thematic areas, which include Good Governance; Inclusive and Sustainable Growth; Poverty Alleviation, and Safer and Better Public Infrastructure. The ILAMS project will contribute to inclusive and sustainable growth and protection of

our environment, and is particularly aligned to National Outcomes: a more inclusive, sustainable and dynamic knowledge-based economy; and a more inclusive, sustainable and effective land and environment management, with resilience to climate change and risk. It also contribute to achieving Poverty Alleviation as will address the needs of poorer and more vulnerable households, so we can become a more caring and inclusive society while still promoting higher levels of income.

The Joint National Action Plan for Climate Change Adaptation and Disaster Risk Management (JNAP) (2010-2015)

55. The development of the Joint Action Plan on Climate Change Adaptation and Disaster Risk Management (JNAP) complies with: (i) Tonga's NSDF (2009–2014); (ii) the Pacific Islands' Framework of Action on Climate Change (2006–2015); (iii) the Pacific Disaster Risk Reduction and Disaster Management Framework for Action (2005–2015); (iv) the International Decade for Natural Disaster Reduction (IDNDR); (v) the Yokohama Plan for Action and the Hyogo Framework for Action (2005–2015); and (vi) the United Nation's Framework Convention on Climate Change (UNFCCC). The purpose of the JNAP is to ensure that related high priorities identified in the NSDF are addressed and implemented at all levels. Key priorities that relevant to the ILAMS project include; (i) Technically reliable, economically affordable and environmentally sound energy to support the sustainable development of the Kingdom; and (ii) Strong partnerships, cooperation and collaboration within Government agencies and with civil society, NGOs and the private sector.

MAFFF Corporate Plan (2014/15 - 2016/17).

56. MAFFF's Corporate Plan (2013 – 2016) sets a vision “To develop and promote a just, equitable and progressive society in which the people of Tonga enjoy good health, peace, harmony and prosperity, in meeting their aspirations in life”. It also provide the direction and guide for the Ministry's support services to the agriculture sector development to focus on assist farmers and key stakeholders to increase production and exports of agricultural, fisheries & forests products; reducing food imports; provide an enabling policy and regulatory framework for food and agricultural, fisheries and forestry; encourage sustainable development of horticulture, livestock, fisheries & forestry resources.

The Tonga Agriculture Sector Plan (TASP)

57. The TASP is being developed with support of the World Bank, FAO and IFAD. The TASP will focus on:

- (i) subsistence-level staple food and livestock production, associated with rural livelihoods and including limited income generation from local domestic sales;
- (ii) an increasingly active and export-orientated sub-sector with a strong focus on vegetables, plus an emerging but not yet operational import replacement sub-sector;
- (iii) the enabling environment in which the sector operates in terms of country systems and regulations, human resource availability and capacity, regulations and compliance, etc.; and
- (iv) cross-cutting issues such as low carbon, climate resilient development and gender equity programs for the agriculture sector.

58. The TASP is expected to be implemented over a long-term timeframe, which reflects short- (5-7 years), medium- (8-15 years) and long-term (16-30 years) objectives. This long period has been selected because it will take some time before programmes and projects impact on specific objectives and bring about sustainable change. These timeframes are also more realistic in terms of building community-owned climate resilient farming systems which can be sustained into the future.

National Forestry Policy (NFP) (2009)

59. The objective of the NFP is to support the management of the forests and trees of Tonga, in a sustainable manner to provide benefits for current and future generations of the Tongan people. It promotes balanced land-use through the protection, conservation and management of indigenous forest areas of high natural quality as part of national heritage; reinforces self-sufficiency through timber production and plantation farming to meet a future demand for timber; encourages sustainable production of wood products; promotes eco-tourism and other recreational activities; commits to community awareness, education and participation; confirms administration by the Forestry Division of MAFFF inter-institutional advisory committee to coordinate activities under the policy. A key issue raised

in the Forestry Policy was that the Forestry Act is incomplete, ineffective and not in line with international obligations and standards on sustainable forest management.

The National Renewable Energy Policy and the Tonga Energy Road Map (2010-2020).

60. The National Renewable Energy Policy was focused primarily on institutionalizing the renewable energy sector under the Energy Planning Unit (MEIDECC) through strategies to build its capacity to plan, develop and manage renewable energy projects/programs. Further, it sets out Government's commitment to affordable and appropriate renewable energy technologies – solar, wind, biomass, geothermal and wave energy. The Tongan Government recognises that the full benefits of investing in renewable energy can only be realised when it is a part of an overall plan for the energy sector. This initiative has resulted in development of the Tonga Energy Road Map 2010-2020 (TERM): to reduce Tonga's Vulnerability to oil price shocks and achieve an increase in quality access to modern energy services in an environmentally sustainable manner. Renewable energy is expected to be a major element of the strategy to enhance energy security for the Kingdom.

Climate Change Policy (2006)

61. The Climate Change Policy provides for the sustainable utilization and management of natural resources and the environment. The central policy guideline is to promote environmentally sustainable development that is consistent with priority economic and social needs. Objectives include the following:

- To implement procedures for assessing and monitoring the environmental impact of development activities.
- To support environmental management institutions in strengthening their capacity to anticipate, identify, assess and resolve issues of environmental protection, natural resources management, and nature conservation.
- To effectively integrate environmental protection into policy and investment programmes To cooperate with communities, private sector, NGOs and other stakeholders involved in environmental and natural resource management to ensure their actions facilitate environmentally sustainable forms of economic and social development.
- To ensure that local governments give priority to ensuring a clean healthy environment.
- To have contingency plans in place to minimize the effects of natural and manmade disasters.

62. The successful implementation of such a policy depends heavily on the level of development, access to resources and scientific and technical capacity, which in developing countries are not adequately available.

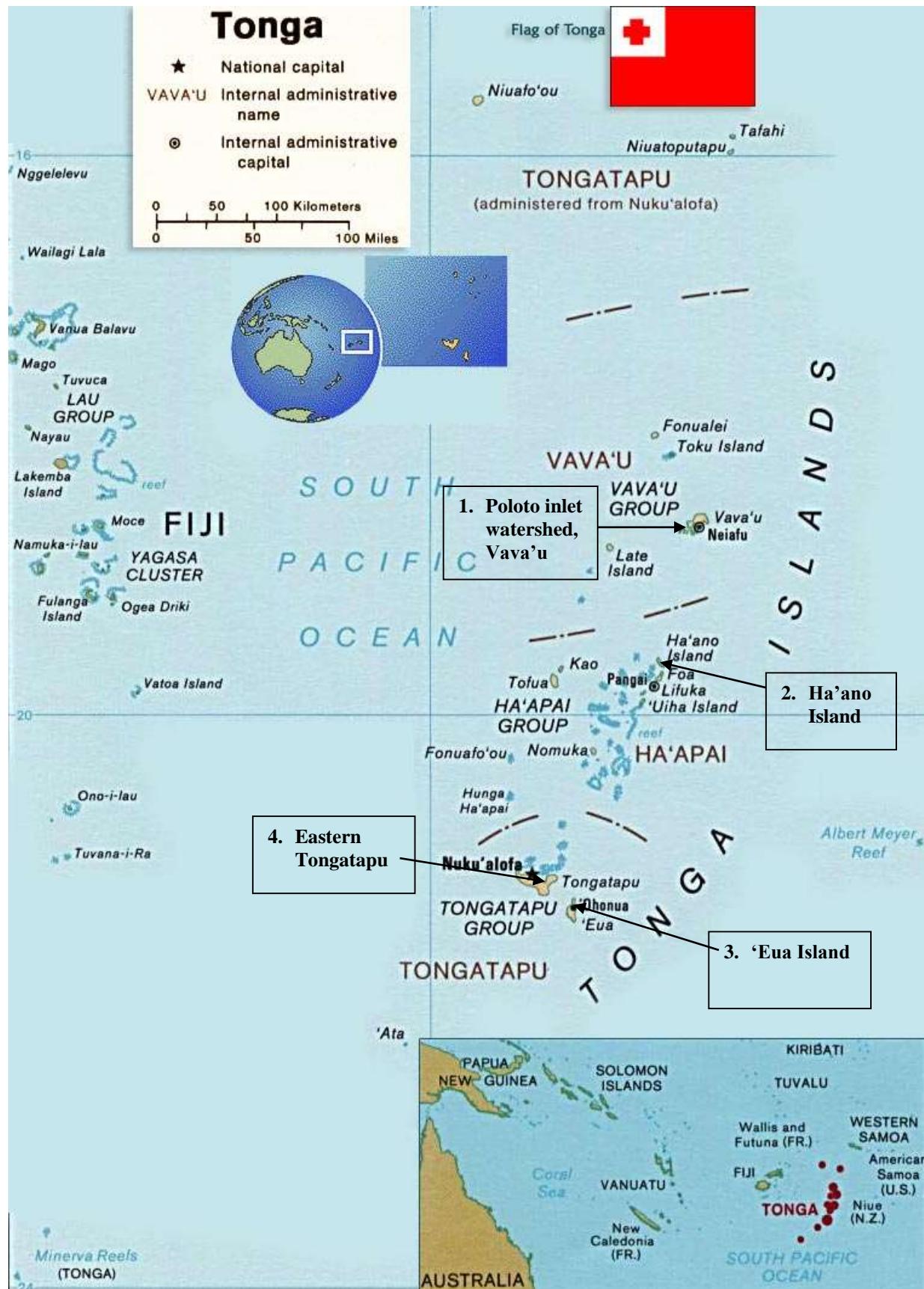
National Spatial Planning and Management Act 2012

63. The enactment of the National Spatial Planning and Management Act 2012 has provided the impetus for integrated land use planning and management for Tonga. It establishes the first-ever National Planning Authority (which is the Minister for Lands) for Tonga and is a landmark achievement for integrated land use in Tonga. However, one of the main challenges relate to institutionalisation and implementation in which a holistic approach to land use planning is required as well as capacity development of relevant institutions and resourcing of implementation measures. The Act has not come into force, pending preliminary arrangements being put into place such as adequate resourcing for administration and implementation, confirmation of governance structures, clarifying the application of the Act to specific sectors and development projects and the continuation of a robust public awareness program.

1.2 TARGET LOCATIONS

64. At ground level, the project will work in four locations, one in each of the country's four regions.

Figure 1. Map of Tonga, showing the locations of the target localities



65. Between them, these locations are broadly representative of the range of socioeconomic and biophysical conditions found across the Kingdom, including areas with net population growth and decline; low islands, raised coral platforms and a high volcanic island; remnant forest and areas completely converted to coconut-based agroecosystems; and areas with intensive cash crop production as well as others with principally subsistence-based systems.

Box 1. Basis for the definition of the target localities

The definition of the target localities reflects the fact that the project forms part of the GEF regional “ridge to reef” (R2R) programme. The R2R approach is described as follows in the R2R Programme document

“a comprehensive approach to managing activities of multiple sectors within a complete ‘catchment’ or ‘watershed’, **from the ridge top down through to the ocean** to ensure natural resource sustainability, biodiversity conservation, risk reduction and livelihood generation. **For atolls and low islands, the entire island would be considered for this comprehensive integrated approach**”.

Based on this guidance, the definition of the boundaries of the target localities reflects the different topographical characteristics of the islands in question. Ha’ano is a low island, without defined watersheds, and so will be covered in its entirety; ‘Eua is steep and volcanic but will also be covered in its entirety as the whole island can be considered one watershed due to its small size; Tongatapu contains the capital Nuku’alofa, which has urban environmental issues that are beyond the scope of the project, so only the eastern part of the island will be covered, which drains into the island’s central lagoon; and Vava’u is topographically complex and also has an urban centre (Neiafu) so only one drainage basin in the east of the island will be covered.

66. Within these overall localities, a number of specific target villages have been selected for the piloting and demonstration of sustainable land management (SLM) practices, on the basis of the criteria presented in Box 2 which were discussed with local and national stakeholders during the project development process:

Box 2. Criteria for selection of target villages within overall target locations

1. Scale - small island community (15 – 30 households)
2. Existence of problems - with roaming livestock, soil degradation/erosion, coastal erosion, degraded forest landscapes and associated loss of biodiversity and ecosystem services, and limited access to energy and water supply
3. An integrated R2R approach – the R2R approach can be applied, meaning area encompasses an entire watershed or island ecosystem
4. Community commitment - strong interest and commitment by local leaders and community members to project methods and goals
5. Available land – land readily available for piggery systems and fodder crops
6. Community stability – whether community is united (or divided by disputes)
7. Accessibility - geographic accessibility to minimize travel time and costs for project staff and community members when attending trainings, etc.
8. Past experience - community has demonstrated experience and capacity in implementing development activities
9. No existing projects – there should not be similar or conflicting activities
10. Replicability - the area should be comparable to other sites in Tonga (e.g. not an outlier) to maximize opportunities for replication and scaling up

67. The four selected localities are as follows:

1. Eastern Tongatapu

68. Tongatapu island is the location of the national capital, Nuku'alofa: it is home to almost two-thirds of the national population and is the focus of net in-migration from the other islands of the group, and consequently is undergoing moderate levels of population growth, of 0.9%/year (see Table 3). The island, which has an area of 259 km², is mainly flat, with a few small hills rising to about 30m, and with a coral base covered with around 3m of volcanic ash. With the exception of a few salt-affected coastal areas, soils are highly productive, easily cultivated and suited to a range of vegetable, root and tree crops as well as pastoral farming.

69. The target locality for the project will consist of the eastern part of the island, between Fanga'uta Lagoon and the eastern coast, with an area of approximately 6,475ha.

Figure 2. Tongatapu, showing the approximate boundaries of Target Locality 1



70. Within this target locality, the pilot site will be the village of Haveluliku. This is one of the Government Estate villages, and it is about 27km from the capital, Nuku'alofa. The 2011 population census showed that it had a total population of 126, in 34 households. The 1993 Land Use and Crop survey recorded a total number of 62 farmers and a cropped area of about 77 ha out of a total land area of 206 hectares.

2. 'Eua Island

71. 'Eua island lies 40 km south-east of Tongatapu. The island is the third largest in the group measuring 19km long and up to 7.5km wide, with an area of around 8,500ha. It has two administrative districts with a total of 14 villages and a population of just over 5,200 inhabitants (2006 Census). Although most of its surface is covered by limestone, 'Eua is unique among Tonga's limestone islands in that its core consists of volcanic rocks, and these form exposed outcrops along the eastern ridge and eastern cliffs (Hoffmeister 1932; Bryan et al. 1972).

72. Extensive forests and some plantation forestry cover the range of hills which run for most of the length of the island on the eastern side. Most farming occurs on the gentle slopes and on flat terraced land of the western half of the island. Soils are fertile, and with the exception of southern areas where coral outcrops are found, are easily cultivated. Eua serves as an important supplier of agricultural produce to Nuku'alofa, and increasingly (because the island has the only significant stands of native forest in Tonga), firewood and natural forest products such as medicines and custom material used in crafts, decoration, and personal adornment ('Eua State of Environment report)⁹.

⁹ <http://www.spc.int/lrd/spcgiz-coping-with-climate-change-in-the-pacific-island-region/tonga-pilot-site>

Figure 3. ‘Eua island (Target Locality 2)



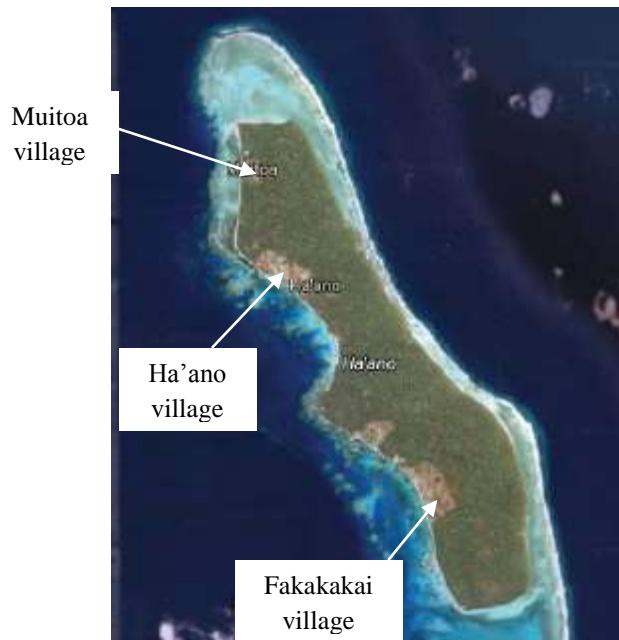
73. The integrated agro-ecosystem system will be piloted in Ta’anga, which is a relatively small village with only 17 households and a total population of 97 people in 2011. The 1993 Land Use and Crop survey recorded a total number of 20 farmers and a cropped area of about 50 hectares. This represents 68 percent of the total arable land area available to this village.

3. Ha’ano Island

74. This island, which has an area of 658ha and a population of 477 in 2006 (down from 588 in 1996), belongs to the Ha’apai region, which is located 150 km north of Tongatapu in the centre of the archipelago. Ha’ano is one of the islands that make up The Ha’apai group, to which Ha’ano belongs. The Ha’apai Group consists of 43 coral islands (18 of which are permanently inhabited), with a total land area of 110 km² and a population in 1996 of 8,148 people spread between 28 villages. The group has very low topography; the vegetation consists of secondary fallow, with a cover of coconuts. There are few other trees to protect the land from wind and salt spray, and for this reason, soil erosion is a problem. The consequence of erosion, and the practice of slash and burn agriculture, has been a decline in soil productivity (MAF 1997). Soils vary from island to island: the higher, older islands with more than one terrace possess good quality soils capable of producing a wide range of crops and forages, while the younger lower islands (most of which are uninhabited) have less fertile, drought prone sandy soils of very limited productive capacity.

75. The piloting of agroecosystem practices will be carried out in Pukotala village, which is one of four villages on the island. The 2011 population census recorded a total village population of 126 in 34 households. In the 1993 Land Use and Crop survey, there were a total of 42 farmers with 30 hectares under crop, which was 47 percent of total land area that the villagers have.

Figure 4. Ha'ano Island (Target Locality 3)



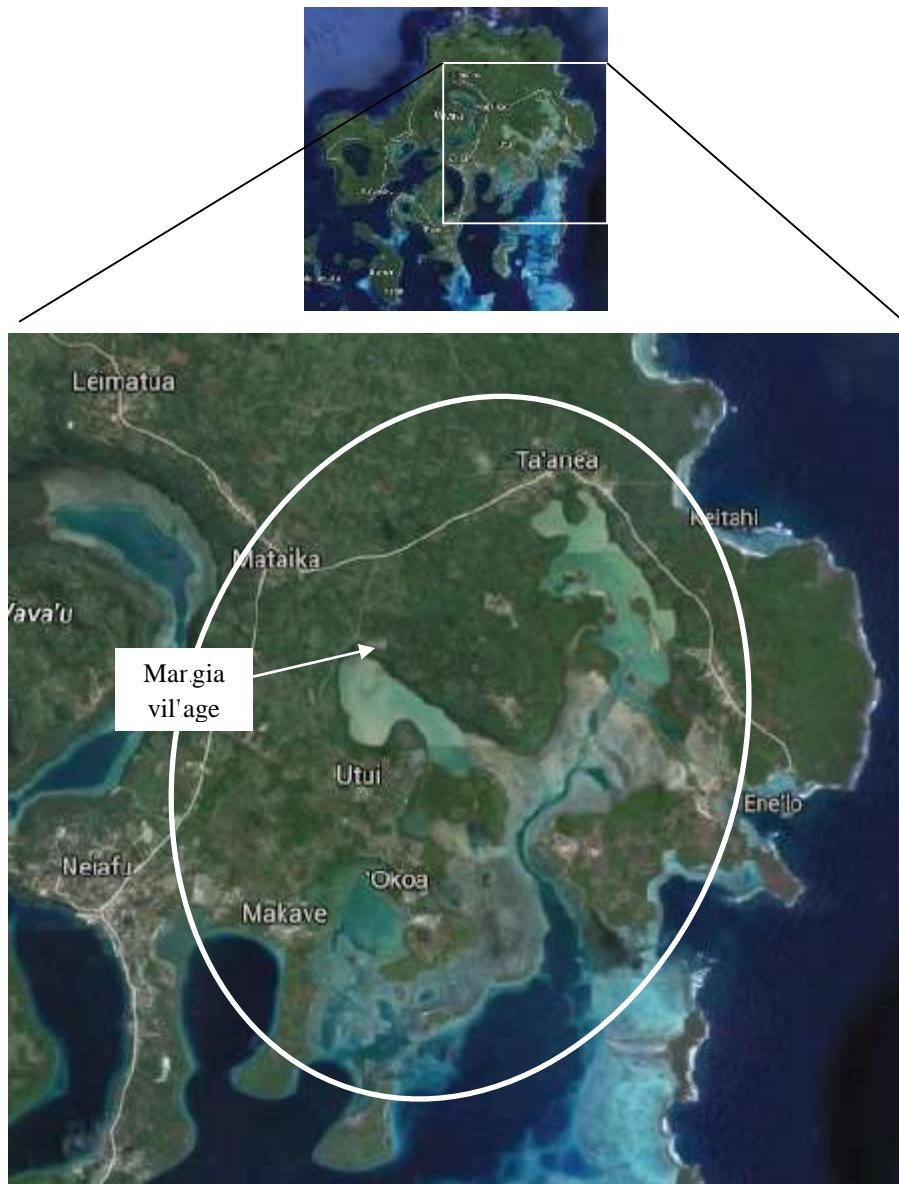
4. Poloto Inlet Watershed, Vava'u

76. Vava'u is the main northern group of islands. It is the second largest group with a total land area of 119 km². Most of the population, estimated at 16,000 in 1996, live on the main island of Vava'u, or islands joined to Vava'u by causeways. The natural vegetation pattern is characterized by a series of concentric rings from the coast to the Island's centre. Besides changes in soil type, the natural vegetation pattern is a result of the influences of salt in the soil, of wind intensity, and of salt spray, which decrease with increasing distance from the coast. Additionally, vegetation tends to be heavier in the west due to higher and more even rainfall and lesser influence of salt spray which is blown on the prevailing east and north-easterly winds. The creeping grass and bush vegetation of the beach has been replaced by a narrow strip of coastal forest. Lowland rain forests of high density and high biomass production dominate the interior of the land. However, intensive agricultural development has transformed much of the land in Vava'u into inter-cropped coconut plantations or secondary fallow vegetation. Rainforest remnants persist largely on areas considered too steep for agricultural use.

77. The main islands of the Vava'u group originated from raised coral. They have a characteristic terraced silhouette and appear to be 3-tiered. Vava'u, the largest island, has a maximum elevation of 213 m. The soils of the group are developed largely on a substantial mantle of volcanic ash, up to 9 m thick, overlaying the coral limestone. It is mainly on steeper sites and recently accumulating beach areas that coral based soils are found. The best agricultural soils in Vava'u are found in the west and central districts whilst those in eastern areas tend to be shallower, have old very hard clay, and are of lower natural fertility (RAFA 1993).

78. The pilot site will be centred on Mangia village, with an area of around 2,975ha. The 2011 population census recorded a total village population of 225 in 45 households. The 1993 Land Use and Crop survey recorded a total number of 29 farmers, cropping about 25 hectares, which is about 37 percent of arable land available to this village. The target locality will also cover the villages of Makave, Mataika, Ha'alaufu, Tu'anekivale, and Koloa surrounding the village of Mangia. These are the areas where most mangroves exist on Vava'u, and include the major reef fishing spots for women in Vava'u, and where soil erosion problems are significant.

Figure 5. Vava'u Island (Target Locality 4)



1.3 THE CURRENT SITUATION

1.3.1 Main environmental threats

79. The project was conceived as a response to a request from the Government of Tonga for FAO to support the enforcement and development of agriculture and natural resource regulation and policies to improve the productivity and sustainability of the resource base, including damages from roaming pigs, which need urgent action. PPG studies have revealed that land and biodiversity resources in the Kingdom are subject to a range of interrelated threats, which need to be viewed from a landscape-wide, “ridge to reef” perspective.

80. The agricultural sector in Tonga has seen a shift over time from self-sustaining shifting cultivation systems, with very little need for external chemical inputs, to more intensive fallow systems, and ultimately permanent cultivation systems.

81. **Intensive production of export crops:** the large-scale expansion of squash cultivation for export (which peaked during the 1990s) has led to unprecedented tree removal and the indiscriminate use of

fertilisers and pesticides. It has been reported¹⁰ that an increasing number of growers found that no matter how much fertiliser or pesticide they applied, their yields continued to fall, as a result of the degradation of the organic matter content of the soil and the locking up of soil phosphorus. The damaged areas are referred to as "*Hot spots ... big areas of land that have been cleared with hardly any trees left, and where the land has been farmed continuously for a number of years ... so that the structure of the soil in these areas has been destroyed and the soil no longer can absorb water to feed the plants*"¹¹.

82. The squash industry has gone through a 'boom and bust' process, with 23,000t grown by around 3,000 farmers during its peak in late 1990s, falling to 1,500t in 2010, of which two thirds was grown by one commercial farmer and the remainder by 3 small farmers. Although the immediate threats posed by this sector (see below) may therefore have eased in the short term, there is a significant likelihood that another such commercial crop may emerge in the future, on the easily accessible and workable lands of Tongatapu, and generate similar threats. The squash boom itself was preceded by a banana boom in the 1960s and 1970s.

83. In the case of squash, the boom in its production was paralleled by an almost seven-fold increase in the level of agrichemical imports into the country over the period 1999 – 2001. Agrichemical application to squash fields has been found to have significant effects on soil and water quality, with probable impacts for reef ecosystems downstream. Water leaving the root zone of squash fields on Tongatapu has been found to be about 3-6 times above the drinking water standard for nitrate, and there is evidence, from the quality of the water entering the central lagoon in Tongatapu, of fertiliser nitrogen leaching under the crop into the fresh water lenses, and then into the lagoon, and probably into the fringing reef, as well. This is partly due to the timing of the fertilizer applications: early applications before the crop roots have developed sufficiently to be able to take up the fertilizer are inefficient, wasteful, and polluting, as the fertilizer is leached out before it can be taken up; growth during the early stages could in fact be sustained by the mineralization of the composting grass that was ploughed in prior to planting. Some of the fertiliser brands used in squash production contains heavy-metal impurities of cadmium, lead and mercury, resulting in the risk of soil build-up of heavy metals. There is also a risk of copper build-up in the surface soil, due to the use of copper-based fungicides, reaching levels of around 200 ppm; it is likely that these levels would adversely affect soil microbiological activity, and lead to a decline in soil quality¹².

84. The intensive use of mechanical tillage generally has reduced the soil fertility at a much faster rate as compared to the traditional no tillage cropping system. The tillage preparation of land for the squash season occurs within the main rainfall season. Due to the high clay content of Tongan soils, its structure is very fragile when wet and prone to damage when tilled. As soil structure is degraded, in combination with increased mixing of top soil with the inferior subsoil and exposure to air, there is an increased mineralization of soil organic matter¹³.

85. Despite the "ridge to reef" nature of the threats that these processes apparently cause to water quality in coastal ecosystems, there is as yet little concrete evidence reported in the academic literature of impacts on fisheries. The principal threat to fisheries at present appears to be overfishing.

86. **Alteration of traditional fallow systems:** population growth in some areas (particularly Tongatapu) has resulted in the traditional guinea-grass dominant "bush fallow" phase typically being reduced from about 15 years to an average of about 3 years. Largely as a result of this, much of the country's crop land is now nitrogen deficient and some is deficient in potassium also. In addition, these red volcanic ash soils are strongly P-fixing and most are deficient in P for crop production¹⁴; while there is accumulation of nutrients such as phosphorus, excess levels of this element can cause Zn deficiencies (in sweet potato sometimes mistaken for little leaf disease).

¹⁰ Ofa Fakalata in Clarke and Thaman 1997

¹¹ <http://www.fao.org/docrep/003/x6625e/x6625e02b.htm>

¹² CROPPRO – Sustainable agriculture in a clean environment: Final Report. Brent Clothier, Marijn van der Velde, Steve Green, Carlo van den Dijssel, Viliami Manu, Brett Robinson, Vunivesi Minonet. January 2005. Research report commissioned by NZAID HortResearch Client Report No. 10057/2005 Contract 16982

¹³ <http://www.fao.org/docrep/010/ag120e/ag120e20.htm>

¹⁴ Halavatau S. and Asher C.: Apparent Release of Native Soil Phosphorus by Cover Crops of Mucuna

87. **Free roaming livestock:** free roaming pigs cause significant damage to crops, and also have wider implications in relation to the sustainability of land management and ecosystem management at landscape level. Pigs directly cause land degradation through soil compaction, removal of soil vegetation cover and gulling, leading to erosion and consequent downstream impacts on reef and lagoon ecosystems. They also directly damage coastal ecosystems by foraging, resulting in suppression of mangrove regeneration and increased turbidity in coastal and lagoon waters. They also hinder the application of sustainable land management practices, as many farmers are unable to afford to build the pig-proof fences that are necessary for such practices to be applied.

88. **Deforestation:** estimates of remaining forest cover in Tonga are varied and unreliable, ranging from 4.4% to 11.6%. These very limited levels of extant forest cover are largely a result of clearance for subsistence agriculture due to historical population growth. This situation has been exacerbated in recent years by the expansion of commercial crops, such as the banana boom in the 1960s and 1970s (see paragraph 82 above), which resulted in widespread deforestation, both to clear land for planting and to supply wood for banana boxes. At the height of the banana boom, so many trees were cut to provide shooks for banana boxes, and to extend banana plantings, that sawmillers had to move from Tongatapu to the nearby island of 'Eua. Thus, the search for meagre export earnings diminished valuable native species as well as food-bearing trees such as mango and citrus cultivars (Thaman 1976).

89. Deforestation has been made worse by indiscriminate burning, which has favored the establishment of Guinea grass at the expense of coastal and inland tree species, including coconuts. As a result, it has been very difficult to grow ground crops and useful trees because of excessive salt spray and recurrent fires. The limited forest resource is fragmented and subject to incursions of invasive weeds and pests.

90. Forests on 'Eua, which make up the largest remnant forest block in the country, are currently still under threat from agricultural conversion. Farmers are increasingly entering the state-owned forest to cultivate mainly kava and taro. Most cultivation is on a semi to full commercial scale and a recent survey of the illegal farmers reveal varying socio-economic backgrounds. The normal clearance practice is to indiscriminately burn trees at the base, leaving them to die and rot. A recent comparative assessment showed clearance of indigenous forest to have accelerated since 2005. This pressure on the forest is expected to increase with growing population and economical pressure.

91. Consultation workshops with the 'Eua community reveal a growing concern towards the forest clearance, that is carried out by a handful of farmers. Concerns from the community were based largely on cultural reasons and for the protection of their water source. Increased sedimentation and turbidity in the island's water supply are often reported during periods of high rainfall when eroding soils and contaminants, such as chemicals used in nearby croplands, drain into the water catchments. During the drier season, organic waste sometimes settles in the pipelines causing blockages, which in turn contributes to the already low water pressure, further restricting water supply to the upper part of the island. According to figures from the Tonga Water Board, water usage has significantly increased in the island and this demand puts more pressure on the water supply ('Eua State of the Environment Report). Previous studies recommend that it would be more economical to look after the watershed than maintaining expensive equipment such as water filters and purifiers to remove the contaminants.

92. The forest also provides material for local handicrafts, medicine, and food. The traditional 'Eua basket, kato alu, is special in Tonga as it is made from vines (*Epipremnum pinnatum*, Araceae, aerial roots) now found only in the 'Eua forest. Certain medicinal plants and trees can only be sourced from the 'Eua forest, and are sought after by people on other islands.

93. Loss of tree cover, particularly on the windward coasts of the islands, increases vulnerability to damage from wind, salt spray, erosion, and flood; the vital role that the remnant tree cover plays in this regard was made evident during Hurricane Isaac in 1982 (the worst hurricane in the country's recorded history), when areas with even small groves of trees experienced comparatively minor damage relative to wholly deforested areas.¹⁵

¹⁵ <http://archive.unu.edu/unupress/unupbooks/80824e/80824E03.htm>

94. Mangrove areas are under threat from human activities including consumption for fuel wood, traditional medicines, dye and tannins, and building materials, as well as pollution, waste dumping, urban expansion and land reclamation. 14 ha of the Nukuhetulu mangrove forest around the Fanga'uta Lagoon on Tongatapu is dead from non-identified causes. Satellite images suggest an alarming 30.5% loss rate from these three main mangrove forests between 2004 and 2012. The clearing of mangrove forests and the exploitation of beach sand for construction weakens the stabilization of the coastline and makes the islands more vulnerable for coastal erosion and the intrusion of sea-water.

95. Despite historical levels of growth in national population, the link between demographic growth and deforestation is only valid now in certain locations, such as Tongatapu. In the other island groups, population is on the decline (see Table 3), and unlike 'Eua, where a significant forest remnant exists, most of the other islands have little forest area left to deforest apart from narrow coastal strips of salt-resistant vegetation and mangroves. Ha'ano, for example, is completely covered by coconut plantations, with no remaining natural forest.

96. **Over-exploitation and Open Access to coastal and near-shore marine resources:** A major feature of resource management in Tonga is the open access nature of Tonga's inshore fisheries¹⁶. Tonga's sea areas were defined by Royal Proclamation in 1887 to be all islands, rocks, reefs, foreshores and water lying between 15 and 23.5 degrees south latitude and between 173 and 177 degrees west longitude. Because all geographic features inside this area, including land and sea, are owned by the King, this has resulted in two consequences as related to fisheries: (i) all Tongans have equal fishing access to all Tongan waters, and (ii) any traditional claim of local control or management authority over fishing areas was abolished¹⁷. This system may have worked reasonably well in the era of subsistence fisheries, but it has fairly recently collided with commercial realities and the carrying capacity of inshore resources.

97. The open access status of mangrove forests has also facilitated unsustainable forms of extraction there, including the cutting of trees for firewood for sale and the stripping of bark for tannins, as well as the extraction of crabs and fishes for sale.¹⁸ The net effect of open access and associated lack of community control is that the conditions do not encourage a long-term relationship with the natural resources. The first-come-first-served regime now prevailing is an incentive to harvest as much as possible, as fast as possible¹⁹.

1.3.2 Baseline initiatives

98. The project will build upon a solid baseline of investments by Government and other agencies, which are outlined below according to their relevance to the main thematic areas of this project:

Improving the enabling environment for integrated land and agro-ecosystem management,

99. The Lands Department of MLSNR has been working with FAO to customize the computerized **Solutions for Open Land Administration (SOLA)**²⁰ system as part of the institutional upgrading required to enable the Land Department's ability to efficiently process land applications including the acquisition and resumption of landholder rights (expropriation) and the surveying of land required for urban infrastructure. The SOLA system, implemented in November 2013, initiated the digital capture of both the tax and town allotments and started to address data quality issues with the allotment map data. 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. GIZ is supporting the development of a National Land Use Policy to guide and support the sustainable use of land resources in the kingdom.

100. The application of the Forest Management System, including the realisation of forest inventories and

¹⁶ Fishery and Aquaculture Country Profile – Tonga, FAO, 2010

¹⁷ Petelo, A, S. Matoto, and R. Gillett (1995). The Case for Community-Based Fisheries Management in Tonga. Background Paper 61, Workshop on the Management of Pacific Island Inshore Fisheries, South Pacific Commission, Noumea.

¹⁸ Tonga's Fifth Review Report on the National Biodiversity Strategy and Action Plan, 2014

¹⁹ Fishery and Aquaculture Country Profile – Tonga, FAO, 2010

²⁰ <http://www.flossola.org/about>

the management and use of the resulting data, is carried out by the Forestry Division, which has access to satellite imagery from 1980 for all islands and to the GIS system at the Department of Lands and Survey.

101. Planning at national level is further supported by the “**Improving agricultural productivity in Tonga through ensuring data availability and enhancing agro-meteorological services**” project, a joint initiative among the APEC Climate Center (APCC), the Tonga Ministry of Agriculture, and Food, Forests, and Fisheries (MAFFF), and the Tongan Meteorological Service (TMS). The project aims to develop services to support agricultural risk management for selected cropping systems in Tonga. To accomplish this goal, the project will carry out research and modelling of the performance of a variety of crops against different climatic stress regimes. Particular interest lies in crop production versus pests, diseases, and climate factors. The project period is from August 2014 to October 2016 and will have a total funding of USD 434,000 across the project period.

102. A GIZ-funded project is focused on land-based activities to develop national strategies for adapting to climate change in agriculture, forestry, and land use planning - with courses mainstreamed into school curriculum. The total budget for the Pacific for Phase I (2011-2015) from Germany is approximately US\$ 20 million. It is expected that GIZ will continue to support Tonga in Phase II (2016-2019), except the advancement of activities supporting the creation and management of the larger ‘Eua Watershed due to limited funding (GIZ has to date supported the protection and management of the ‘Eua Watershed, including the removal of encroachment from portions of the catchment area and replanting degraded areas with local species of trees).

Promotion of sustainable resource management practices

103. Government ministries such as MAFFF, MLNSR, and MEIDECC provide sectoral support to select communities as financial and technical resources allow, primarily through externally-funded projects. The Agriculture Extension and Forestry divisions of MAFFF provide planting materials and technical advice to farmers, but service delivery is hampered by inadequate funding for planting materials propagation and inadequate staffing levels.

104. The Forest Division of MAFFF manages a few forest 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.

105. There has been significant development agency support in the past to agricultural development, including the STABEX (EU-funded) Project which concluded in 2008 and: (i) encouraged the planting of kava, vanilla, and vegetables; (ii) provided for the procurement of tractors and farm implements; and (iii) most notably, constructed quarantine facilities which included fumigation chambers on Tongatapu and Vava’u, a walk-in cooler and a blast freezer on Tongatapu, and an upgrade for the High Temperature Forced Air (HTFA) facility located at the airport.

106. Currently, the regional **Pacific Horticultural and Agricultural Market Access Programme (PHAMA)** (AUS\$ 12 million) supports agriculture development in Tonga by improving product quality, market access and export volumes.

107. At national level, the **Tonga Rural Innovation Project (TRIP)** is currently implemented by MORDI Tonga Trust under an agreement with the Ministry of Finance and National Planning of the Government of Tonga; the project became effective in May 2012 and is scheduled to complete in June 2017, with a total cost of about USD4 million of which IFAD contributes USD 3 million and the Government of Tonga and community and business beneficiaries contribute 1 million. The project will be implemented nationally in selected communities with the major objective to strengthen the capacity of target communities to plan and manage their development priorities in order to achieve improved sustainable livelihoods.

108. The Peoples’ Republic of China is implementing the **China Aid Agricultural Technical Cooperation Project (CAATCP)** with the MAFFF Research Stations in Tongatapu and Vava’u respectively. The project has demonstrated piggery with biogas production, vegetables, intensive cropping, mushroom growing

and aquaculture. This project also has outreach programs on the outer islands and is expanding off the research stations to on-farm demonstrations. The technical package being promoted is expensive to construct and maintain and may not be sustainable on small-scale, individual farms. MAFFF has just signed an agreement with the Peoples' Republic of China Government to extend the project for another 3 years. The total value of the technical assistance is estimated to be around US\$2 million for this extension phase.

109. The **Rural Enterprises for Sustainable Livelihoods in Tonga (RESULT) programme** is currently implemented by Oxfam New Zealand (ONZ) working in partnership with the Tonga National Youth Congress (TNYC) in 2015 and will be completed in December 2019. RESULT will become the business outlet for a nationwide co-operative production and processing network for virgin coconut oil and vanilla. The project aims to establish a financially sustainable and profit generating social enterprise for youth groups and farmers who currently rely on subsistence agriculture across in all the main island groups in Tonga with improved secured and sustainable livelihoods. This project has a total cost of about NZ\$1,955,777 with New Zealand Aid contribute NZ\$1.5 million.

110. The **Disaster Preparedness Programme of the European Commission's Humanitarian Aid department (DIPECHO FAO)**, funded by the EU and implemented by FAO, targets vulnerable communities living in the main disaster-prone regions of the world. Typically, DIPECHO-funded projects cover training, capacity-building, awareness-raising, early-warning, and planning and forecasting measures, with the funds being channelled through aid agencies and NGOs working in the regions concerned. DIPECHO FAO focuses on: (i) disaster needs assessment at the community level; (ii) improved communication of meteorological information to rural communities; and (iii) developing Disaster Risk Reduction (DRR) materials and tools on adaptation methods in agriculture.

111. In addition, there are a number of baseline initiatives specifically focused on climate-related aspects of resource management, which are of relevance to this project's proposed support to protecting coastal ecosystems due to their role in buffering the effects of climate change. The **Strategic Programme for Climate Resilience** (Asian Development Bank) is a US\$20 million programme which seeks to mainstream climate resilience into development planning and address country priorities focusing on the most vulnerable sectors and communities. This will involve: (i) a range of capacity building activities (e.g. a train the trainers programme, and scholarships for post-graduate degrees); (ii) operation of a Climate Change Trust Fund which will provide community grants to implement community climate change risk management measures; and (iii) strengthening ecosystem resilience and climate proofing of critical infrastructure supported by selected communities, sectors and national agencies. The project will support the rehabilitation of mangrove areas.

112. The **Global Climate Change Alliance: Pacific Small Island States Project (2012)** is trialling coastal protection measures in eastern Tongatapu around the capital of Nuku'alofa where sea level rise has resulted in coastal erosion. The project is attempting to correct piecemeal and inadequately-engineered attempts to protect 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. 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 the EU is approximately US\$0.8 million for 2011-2014.

113. The following table provides a summary of the above-mentioned baseline activities that this project will build upon, and as such, they provide the main sources of co-financing for this project.

Table 7. Baseline Activities and Main Sources of Co-financing.

Sources of Co-financing	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount (\$)
National Government	Ministry of Finance and National Planning	In-kind	500,000
National Government	Ministry of Finance and National Planning	Grant	2,840,000
Regional Organization	Secretariat of the Pacific Community	In-kind	750,000
NGO	Mainstreaming of Rural Development Innovation Tonga Trust (MORDI)	In-kind	980,000

NGO	Oxfam	In-kind	240,000
Bilateral agency	GIZ	Grant	150,000
GEF Agency	FAO	In kind	300,000
GEF Agency	FAO	Grant	1,100,000
National Academic Organization	Tupou College	In-kind	155,000
National Academic Organization	Hango Agricultural College	In-kind	155,000
Total Co-financing			7,170,000

1.3.3 Remaining barriers to address the environmental threats

Barrier 1: Regulatory and policy frameworks do not adequately support integrated, landscape-wide approaches to land use planning and management

114. 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.

115. Despite the baseline of environmental legislation and policy instruments described in Section 1.1.10 above, legislation and policy instruments tend to perpetuate sector- and site-specific visions, failing adequately to provide for the complexities of environmental and social processes and of the relations between them at farm, community and landscape levels.

116. A national Spatial Planning and Management Act was approved in 2012, but there is little experience with integrated land and resource use planning at a landscape, ecosystem, or island-scape, level; implementation of this act, under the oversight of the Planning and Urban Management Agency (PUMA), will initially focus on the peri-urban area of Nuku'alofa. There is currently no National Land Use policy, and without this there is no agreed system for the classification of land use and land cover to be used as the basis for zoning during the process of allocating allotments.

Barrier 2: Land use planning capacities and tenure conditions are unfavourable for sustainable land management

117. As explained in section 1.1.7 above, land tenure in Tonga is complex and highly skewed: many of the commoners (who make up the majority of the population) lack the long-term security of occupancy and use rights they would need to be motivated in investing in managing the land in a sustainable manner. The nobles, who own the land, may be reluctant to sign the legal registration of commoners' allotments, in order to keep open options such as leasing out the land more lucratively to outside investors; while leases may be short term in nature, with inadequate definition by the owner or allotment holder of conditions regarding how the land is to be managed by the leaseholder. The fundamental cause of this situation is the nature of the country's tenure system and the imbalances of power and resource access that it perpetuates; it is exacerbated by the absence of effective mechanisms for working within this tenure framework to resolve the resulting conflicts of interest in a negotiated manner, that would further the long term interests of all concerned as well as contributing to the national interest by ensuring the sustainable management of the country's natural capital.

118. In addition to affecting tenure and management on individual plots of land, the inadequate development of mechanisms for dialogue and informed negotiation hinders planning and decision-making regarding the spatial distribution of land uses across the landscape. As recognised under the R2R approach, different management practices typically have implications beyond the boundaries of the land unit in question, and flows of environmental services and impacts tend to operate at a landscape/seascape level. Examples include the benefits of coastal forest strips in buffering areas further inland against salt spray; the roles of mangroves and coral reefs in protecting coastal areas against wave impacts and saltwater intrusion, as well as in providing breeding, grow-on and/or feeding areas for the fish populations that contribute to local livelihoods and food security; and the importance of upstream forests for the quality and stability of the water flows enjoyed by populations downstream. Land use planning at this scale may involve trade-offs between the shorter term interests of those who manage

and use the areas where these services are provided, and other actors in the landscape who may benefit from the services. Agreeing on these trade-offs and on how to achieve them requires levels of trust and capacities for negotiation that are currently lacking.

119. A further barrier to the creation of the conditions of tenure security required for land to be managed sustainably is the continued backlog in the land administration and cadastral systems, through which land allotments (and therefore tenure security) are assigned; this system is just beginning to be digitized. This situation also impedes land use planning: without confirmation of land tenure it is difficult to propose and negotiate management alternatives on specific plots of land in the interest of the community as a whole (for example, through the protection of watershed or coastal forests, or the selection of sites for the establishment of community piggeries in order to reduce land degradation).

120. In addition to the insecurity of tenure, land use planning is hindered by the inadequacy of data and information management systems. As evidenced during the development of both the NBSAP and the National Forest Policy, there is very little information available on forest cover, for example. The data available are not comprehensive and are based on estimates from several years before. Data collection and management are similarly weak in the agricultural sector: although FAO is currently assisting the Government with the implementation of the 2015 Agriculture Census, the previous one was in 2001, a periodicity which is inadequate to capture the dynamics and implications of “boom and bust” cycles such as that shown by squash production.

Barrier 3: Inadequate capacities in Government and among land managers for the support and implementation of sustainable land management practices adapted to biophysical, socioeconomic and tenure conditions

121. Knowledge, capacities and awareness among land managers, regarding the sustainable management of the land and other natural resources, have failed to keep up with the pace of the changes affecting the agricultural sector (most notably the change from a predominantly subsistence-based economy based on long bush fallows to one characterized by short fallows and intensive commercial agriculture) and socioeconomic conditions (especially the processes of internal and external migration and the resulting disparities in demographic trends between islands). A particular challenge has been the reconciliation of cultural traditions, such as the value attached to pigs and their importance for meeting social and cultural obligations, with the need to address their environmental implications, such as the damage resulting from the habit of allowing the pigs to roam free.

122. The technical and financial resources of the Government (in particular MAFF) are inadequate to meet the challenge of supporting the population in adapting to these changes. The extremely high costs of travel and transport to the outer islands mean that the limited resources that do exist tend to be focused on major islands where large populations live. Technical capacities in many government departments tend to be limited to a few individuals; this situation has been exacerbated by the fact that many qualified people have left the country to work overseas.

123. MAFF is further constrained by its limited technical and financial capacities to carry out research into land management technologies, leading to a reliance on development partners and a consequent lack of ownership of research results among Government staff and local people.

1.4. THE GEF ALTERNATIVE

1.4.1 Development objective, project objective, outcomes and outputs

124. The **Development Objective** of the project, to which it will contribute together with the UNDP project in Tonga and projects submitted by other countries in the region, is *to maintain and enhance 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.*

125. The **Project Objective** is *to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to*

rehabilitate degraded landscapes.

1.4.2 Strategy

126. As part of the regional R2R Programme, the project will follow GEF guidance on the R2R concept by applying “a comprehensive approach to managing activities of multiple sectors within a complete ‘catchment’ or ‘watershed’, from the ridge top down through to the ocean to ensure natural resource sustainability, biodiversity conservation, risk reduction and livelihood generation. In accordance with the R2R concept, the project will address the flows of ecosystem services and impacts between different land units and activities at farm, community and landscape levels, such as:

- The risks of impacts on lagoon and other aquatic/coastal ecosystems caused by land-to-coast flows of nitrates and heavy metals generated through the excessive and inappropriate application of inorganic fertilisers;
- The upstream-downstream impacts on water supplies caused by the deforestation of remnant forests located on catchments and recharge areas of steep islands such as ‘Eua.
- The undermining of the buffering role of coastal forests against the impacts of salt spray, wave impact and sea level rise, and consequent impacts on agricultural lands and settlements further inland;
- The landscape-wide implications of the inadequacy of provisions for land use planning and secure tenure, in terms of the pressure on existing land uses and on fragile ecosystems.

127. Core elements and principles of the project’s strategies in accordance with this R2R approach will be as follows:

- Consolidation of capacities and mechanisms for land use planning (LUP) with a watershed/landscape wide perspective, taking into account socioeconomic interactions and flows of ecosystem services and environmental threats between the different units that make up the landscape;
- Support to the incorporation of long-term perspectives to land management, allowing farmers to conserve and improve the “natural capital” of the land and thereby ensure its availability for future generations;
- Facilitation of participatory, negotiated, human-centred and evidence-based approaches to decision-making regarding land use and the modalities whereby stakeholders are able to secure longer-term access and manage the land, respecting cultural and customary dimensions;
- Support to the development of capacities among stakeholders to formulate and apply sustainable and integrated land management practices, which meet their livelihood and economic development needs while addressing land degradation processes, and reflect variations in biophysical, socioeconomic and tenure conditions between different sites.

128. Building on lessons learned from previous community-level interventions in Tonga, the project strategy will focus strongly on building consensus and commitment within communities before actual investment (apart from training and consultations) begins. Extensive community consultation will be built into project activities, allowing ample time for communities to question proposed activities and eventually come to a consensus on what they want, how they want to achieve their goals, and what their roles and responsibilities will be in implementation of project activities. While this means more time in the consultation and planning stage of community-level pilot activities, it will help ensure that communities are committed to achieving and sustaining project outcomes.

1.4.3 Components, Outcomes and Outputs

129. The three technical components of the project, and their corresponding outcomes and outputs, will respond to the three principal barriers described in Section 1.3.3 above.

Barriers	Components
1: Regulatory and policy frameworks do not adequately support integrated, landscape-wide approaches to land use planning and management	1: Improving the enabling environment for integrated land and agro-ecosystem management
2: Land use planning capacities and tenure conditions are unfavourable for sustainable land management	2: Site-based capacities for evidence-based negotiation of land use planning, management and tenure rights
3: Inadequate capacities in Government and among land managers for the support and implementation of sustainable land management practices adapted to biophysical, socioeconomic and tenure conditions	3: Strengthening of capacities for the formulation, dissemination and support of sustainable land management practices with an integrated R2R approach

Component 1: Improving the enabling environment for integrated land and agro-ecosystem management.

130. This Component will focus on enhancing the policy and legal environment to remove barriers and facilitate and encourage the adoption of integrated agro-ecosystem management systems.

Outcome 1.1: Increased acknowledgement and incorporation of integrated land and agro-ecosystem management principles in national policies, laws, and regulations

Output 1.1.1: Policy intention papers to inform sectoral policy and planning processes

131. The primary activities leading to this output will involve a review of the policy and regulatory environment in key sectors such as, but not limited to environment, agriculture and livestock, and forestry, to assess, identify and recommend ways to address impediments to scaling up of integrated land and agro-ecosystem management approaches. The review recommendations will include proposed improvements in policy, legal and regulatory frameworks for consideration by the Government. A series of Policy Intention papers will also be developed to be used as references to inform sectoral policy and planning processes, including the further development of local governance rules and procedures currently being spearheaded by the Ministry of Internal Affairs.

- **Activity 1.1.1.1:** Review policy and legal frameworks of relevance to creating an enabling environment for the adoption and scaling up of integrated land and agro-ecosystem approaches.
- **Activity 1.1.1.2:** Develop a series of Policy Intention reference papers to inform sectoral policy and planning processes on issues related to integrated land and agro-ecosystem approaches.

Output 1.1.2: National Land Use Policy document

132. An initial draft of the National Land Use Policy has been developed with GIZ support, but it has not been finalized, and does not currently address the absence of land use or land cover classification in Tonga. Finalisation of the Policy, with project support, will provide an entry point for introducing the idea of zoning that takes into consideration value of ecosystem.

- **Activity 1.1.2.1:** Provide advisory, facilitation and drafting support to Government, in consultation with other key stakeholders, for the production of the National Land Use Policy document.

Outcome 1.2: Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide

Output 1.2.1: National System of Land Administration enhanced, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure.

133. An efficient and effective national land administration system is a crucial foundation for those living in village communities feeling secure that they have long-term use of land. The enhancement of the national system for land administration in Tonga through the customization of the Solutions for Open Land Administration (SOLA) is a crucial foundation for monitoring land use changes over time. It is also

important for securing land tenure, without which strategic land use planning that promote the adoption of agro-ecosystem approaches and finding alternatives to counter unchecked agricultural expansion cannot take place. Land administration and cadastral systems play a crucial role in safeguarding the security of access to land and natural resources. Introduction of automation to land administration around the world have demonstrated improved systems' efficiency, standardisation and accessibility, which in turn have contributed to responsible land governance.

134. In all, an effective computerized land administration system is crucial to MLSNR Land Management Division's ability to provide better services to land owners and other government agencies that depend on quality and timely data on land and land use for their work. For example, the outputs of the customized SOLA for Tonga would assist the Environment Department of MEIDECC in mitigating the impacts of encroachment on fragile or marginal lands, often found in coastal areas and watersheds. The MAFFF would benefit from accurate data on land titles and land use when helping communities develop integrated agro-ecosystem management plans as envisioned under Component 2, as well as help the Forestry Department identify areas and land-owners to target for restoration of degraded forest landscapes as envisioned under Component 3.

135. FAO started the introduction of SOLA system in Tonga in March 2013 by customizing and implementing a version of the SOLA open source land administration software to support the processing of land applications by the then MLECCNR (now MLSNR). The initial version of Tonga SOLA was implemented in November 2013 but did not utilize the spatial functionality of SOLA to deal with the cadastral mapping and the input of newly surveyed allotments because the digital capture of both the tax and town allotments was incomplete and significant data quality issues with the allotment map data had been identified but not yet dealt with. This map data capture and quality improvement work needs to be addressed urgently²¹.

136. The activities below will build the capacity of MLSNR staff and local contract staff and consultants to activate the spatial functionality of Tonga SOLA. The capacity building will involve assistance from international consultants to ensure local staffs have the required skills to not only complete all the activities but also to sustain the operation of the land administration system in the long term.

- Activity 1.2.1.1: Implement key software and configuration tasks necessary for data improvement work to ensure quality allotment map data necessary for the existing spatial functionality in SOLA to be included in Tonga SOLA.
- Activity 1.2.1.2: Define and institute regular data maintenance procedures to ensure consistent quality of digital map definitions of tax and town allotments, necessary for inclusion of cadastral data and cadastral functionality in the Tonga SOLA based land administration system.
- Activity 1.2.1.3: Develop and make available GIS-based applications that utilize the spatial and cadastral functionalities of Tonga SOLA for evidence-based negotiation of land use planning, management and tenure rights and for monitoring land use changes over time at the village pilot sites under Activity 2.1.2.1.

Outcome 1.3 Improved strategic planning and management of forest resources

Output 1.3.1: National Strategic Forestry Development Plan developed

137. The primary activities leading to this output will include an analysis and review of the current policy, legislative framework and institutional arrangements to identify gaps and remove impediments to promoting sustainable forest management. Based on this review, broad consultations will be carried out with stakeholders towards the development of the National Strategic Forestry Development Plan in year 2 of the project.

138. The National Strategic Forestry Development Plan will highlight the status and trends in forest cover, establish a long-term vision for Tonga's forests, identify short, medium- and long-term objectives, and

²¹ Support to Tonga Land Administration Project, Report by Neil Pullar, FAO SOLA Project Coordinator, November 2013.

provide a detailed action plan for the first five-year period, including priority areas, roles and responsibilities, and costing information. This Plan will serve to guide the Forestry Department and their partners in working together towards securing Tonga's forests for future generations.

139. A series of technical analyses would be conducted as part of developing the Plan, including an economic analysis of the value of Tonga's forests taking into account the ecosystem services they provide. Other analyses could include legal and policy analysis, as well as an institutional analysis and review of the Tonga Forest Department and other government units working directly or indirectly on sustainable forest management. The National Strategic Forestry Development Plan will in effect operationalize the Tonga Forest Policy approved in 2009.

140. Effective implementation of the Plan will require the establishment of a National Forest Monitoring system that utilizes spatial functionality of Tonga SOLA. The Monitoring System would allow for the prioritization of forest rehabilitation activities. Implementation also requires basic services such as nurseries and provision of planting material stocking; field labour; field transport; and protection of replanted areas through community awareness and fencing as needed.

141. As alluded to in the 2009 Tonga Forest Policy, the Plan will need to include Capacity Building, consisting of upskilling of the MAFFF officers (planning, GIS, land use monitoring etc.); and community training (land use planning, conducting assessments, etc.).

- Activity 1.3.1.1: Analyse and review existing policy, legislative framework and institutional arrangements as related to sustainable forest management.
- Activity 1.3.1.2: Develop a Strategic Forestry Development Plan to operationalize the Tonga Forest Policy.

Output 1.3.2: National Forest Monitoring System (FMS)

142. The lack of reliable data on the extent and characteristics of the country's forest resource, and trends in its status over time, is one of the foremost obstacles to the planning of its management and restoration. The improvement of capacities for forest monitoring will enable hot spots of deforestation, where the greatest pressures of encroachment affecting remaining natural forests occur, to be identified and actions to be prioritized accordingly to avoid their continued deforestation. This may occur through improved land use planning (the monitoring data will be fed to these LUP processes) or increased investment in governance and control. This will benefit remnant forests throughout the country, both inside and outside of protected areas. At local level, the results of monitoring will be used to guide the provisions of the directives and policies developed by Village Development Committees (VDC) in each community (see paragraph 52) regarding restrictions on tree felling and land clearance in particular vulnerable areas.

143. The project will develop capacities in the Forest Division of MAFFF for generating and managing data on forest cover, underpinned by the GIS-based application utilized for the spatial functionality aspects of the Tonga SOLA. Support will also focus on developing capacities for the application of the information held in the monitoring system in operational planning of forest management and restoration, including the development of planning instruments and project design proposals. The application of the FMS, including the realisation of forest inventories and the management and use of the resulting data, will be carried out by the Forestry Division; this will form part of the Government of Tonga's co-financing contribution and ongoing activities in this regard (updating and management of data) will continue to be nationally funded after the project end.

- Activity 1.3.2.1: Confirm analysis of existing monitoring and data management capabilities
- Activity 1.3.2.2: Provision of technical advisory and equipment support to the design and installation of the monitoring system
- Activity 1.3.2.3: Conduct awareness programs and capacity building training in the use of GIS-based applications for planning and monitoring forests.

Component 2: Site-based capacities for evidence-based negotiation of land use planning, management

and tenure rights

Outcome 2.1: Capacities for evidence-based and negotiated formulation of resource management plans at landscape and village levels, clarification of farmers' tenure rights and obligations

Output 2.1.1: Multi-stakeholder mechanisms for the negotiation of resource management and tenure

144. Truly sustainable and equitable approaches to land management require the implications of the imbalances of power and access to resources, described in Section 1.3.3, to be addressed, and trade-offs to be negotiated between the interests of the different sectors of society. To this end, the project will promote an approach of participatory and negotiated territorial development (PNTD)²²: this will involve supporting community members' in carrying out initial diagnostics of their interests and visions regarding the management of their territory, and commencing dialogue; initial discussion of proposals for the management of the territory; and facilitating negotiation between the actors with the aim of, wherever possible, achieving consensus-based agreements (which can be termed "social territorial agreements" or STAs). This process will help the actors who are currently more marginalised from access to decision making and security of resource use rights (especially the commoners) to express their needs, while respecting cultural norms and traditions and avoiding conflict. The process will be inserted into the existing social, economic and political systems of the target areas, making use wherever possible of existing mechanisms for organisation and dialogue such as Village Agriculture Committees (VAC) and community meetings (*fonos*).

145. In addition to being essential for promoting negotiation and sustainability as key elements of land planning and management decisions, lessons learned from other community-based interventions suggest that this participatory approach will help to ensure buy-in and ownership of the project itself by community members, which is crucial to their adoption of the proposed integrated agro-ecosystem management systems. This will require participatory meetings, workshops, training and awareness raising, including spatial planning at community/household/group level and community agreements on objectives and roles and responsibilities in the implementation of the project.

- Activity 2.1.1.1: Initial dialogue and participatory diagnostics in target areas
- Activity 2.1.1.2: Facilitation of negotiation processes leading to social territorial agreements
- Activity 2.1.1.3: Participatory review and systematization of processes in order to define strategies for sustainability of negotiation and planning mechanisms

Output 2.1.2: Negotiated and evidence-based plans for land use and integrated agroecosystem management at landscape and village levels

146. The project will support Village Agriculture Committees (VAC), and other local organisations as appropriate, in developing Integrated Land and Agro-ecosystem Management Plans (ILAMP) for each pilot site. The scope of these plans may vary on a site-specific basis depending on the scale and nature of the areas to be covered and their key environmental issues: they will include single village plans as well as multi-village plans covering whole watersheds and islands, in order to ensure that landscape wide issues are adequately addressed. The plans may address, for example, issues such as the location of piggeries, rainwater harvesting tanks, crops, trees, etc. and the prioritisation of areas for environmental protection such as watershed protection zones, coastal protection forests and mangroves (of importance in buffering against saltwater intrusion, wave impacts and salt spray).

147. The plans will be based on information generated through participatory diagnostic exercises (more detailed, spatially-focused and specific than those foreseen under Output 2.1.1), complemented by data on land tenure generated through the SOLA system, which will be strengthened under Output 1.1.2.

148. Each ILAMP will also include provisions for capacity development, including training programmes, toolkits of 'how to' manuals and guidelines, and a range of training workshops in each pilot village to support new and improved ways of farming (see Component 3 for specifics of the capacity development approach). The ILAMPs will also include implementation plans for the specific activities foreseen under

²² <http://www.fao.org/3/a-ak228e.pdf>

this project, and identify the respective roles and responsibilities of various community members and MAFFF, while ensuring that gender issues are taken into account in constructing, operating and maintaining the integrated systems. In addition, the ILAMP will include conflict resolution mechanisms to be used should some community members fail to meet their obligations under the plan. The maps for the ILAMP will be generated from the enhanced SOLA mapping module to be developed under Component 1. In addition to being project outputs, the ILAMPs will be important tools for the execution of the project itself, guide the execution of project activities forming the basis for formal agreements between the communities and MAFFF in implementing the project activities.

- Activity 2.1.2.1: Facilitation of detailed participatory spatial diagnostic and mapping exercises of target communities
- Activity 2.1.2.2: Collection, organization and presentation to target communities of information on technical- and tenure-related variables held in the SOLA and other sources
- Activity 2.1.2.3: Facilitation of participatory development of plans
- Activity 2.1.2.4: Formulation, validation and dissemination of plan documents

Output 2.1.3: 'Eua Watershed Area Management Plan developed, and implemented

149. With support from GIZ, groundwork has been laid for expanding the 'Eua Watershed Management Area to include all catchment areas on the island, including two smaller areas near Hango Agricultural College and the village of Houma. An inter-sectoral committee has been established to guide the further development of the Management Plan and oversee its implementation. The project will support the continued implementation of the 'Eua Watershed Area Management Plan, with ongoing in-kind technical support from GIZ (see section 3.4.1).

150. To strengthen the R2R management of 'Eua land, water and ecosystems in an integrated way, a comprehensive 'Eua Watershed Area Management Plan is necessary. This requires additional technical studies of water stocks, water flows and water quality within the newly-expanded watershed areas; assessment of watershed activities on coastal areas, consistent with the Ridge-to-Reef approach; regular meetings of the inter-sectoral steering committee; and engagement with the Royal Secretary to include the Royal Estate in the overall Management Plan.

151. The Watershed Area Management Plan will be linked to ILAMP to ensure alternatives are provided for farmers in order to reduce encroachment within the watershed, and rehabilitate areas that have been depleted of natural forest from shifting cultivation by replanting with local tree species.

- Activity 2.1.3.1: Carry out key technical assessments on water stocks, water flows and watershed activities, for the development of the 'Eua Watershed Area Management Plan.
- Activity 2.1.3.2: Carry out community consultations based on baseline information and complete the development of a 'Eua Watershed Area Management Plan, linked to the ILAMPs in village communities below the forest areas.
- Activity 2.1.3.3: Implement key priorities identified in the 'Eua Watershed Area Management Plan, focusing on forest rehabilitation and replanting of trees in degraded areas.

Component 3: Strengthening of capacities for the formulation and implementation of sustainable land management practices with an integrated R2R approach

152. Under this component, the project will ensure that capacities exist to identify and sustain specific practices capable of addressing the problems of land degradation described in section 1.3.1 (recognising the landscape-wide nature of many of the land degradation processes), while at the same time respecting the social and cultural context and contributing to the livelihood development and food security needs of the target stakeholders.

153. Although the project aims to contribute to improving farmers' security of tenure, the technical

approaches that it will promote will recognise that tenure security is likely in many cases to remain highly variable. Longer term approaches and those that require higher levels of investment, such as agroforestry plantings and live contour barriers, will be available for situations where tenure is more secure; while others that require low levels of initial investment and yield results in the short term, such as Mucuna fallows, other forms of integrated fertility management, and integrated pest management, will be available when long term tenure rights cannot be guaranteed.

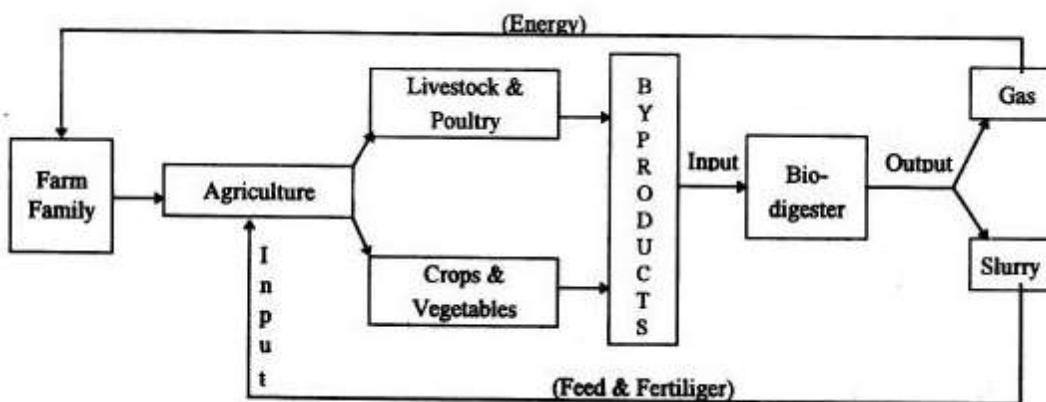
154. As far as possible, the project will aim to assist the farmers themselves to identify appropriate SLM practices that are suited to their needs and their socioeconomic, productive, cultural and biophysical contexts. However, based on consultations held during the PPG phase as well as a review of practical experiences to date in Tonga and elsewhere in the region, as well as academic literature, it has been possible to identify a number of specific SLM practices with particular potential, on which the project will primarily focus.

155. The principal model to be promoted will consist of farm-level integrated agroecosystem management systems, in which the integration of the different components (including cropping areas, agroforestry systems, on-farm woodlands and piggeries) will result in improved environmental resilience linked to increased biological diversity, effective and more efficient water and wastewater management, nutrient cycling/recycling, improved soil health, protect ecosystem services, enhanced forest preservation, and contribution to adaptation to and mitigation of climate change.

156. It is envisaged that the existing practice of crop rotation used in the tax allotment, when integrated with a piggery-biogas to form an integrated crop-livestock farming system will enhance the productivity and health of the whole agro-ecosystem. The improved integrated system will be able to provide both feed for the pigs and food crops for the family. Any surplus can be sold in the market. Overall, the adoption of agro-forestry and crop-livestock integrated farming system based on penning the pigs, will result in more areas made available, both in town allotments as well as in tax allotments in nearby areas for growing of food and fodder crops, and in the case of 'Eua, provide alternatives from encroachment into forest areas.

157. Specific elements of these integrated agroecosystem management systems will include, but not necessarily be limited to, the following:

158. **Piggeries:** the principal direct environmental benefit of managing pigs in enclosed piggeries will be the reduction of the land degradation and crop damage that they cause; it will also make it easier for farmers to invest in sustainable land management practices such as agroforestry without the need also to spend on pig-proof fencing to protect these investments, which for some farmers proves prohibitively expensive. The piggery system also generates farm-wide benefits through the organic residues which can be applied to different crops in the rotation (including vegetables and tree crops) as fertilizer, as an element of the integrated nutrient management approach of the project (described below).



159. Enclosed piggery systems also have the potential to generate significant social benefits, and PPG assessments suggest that this change will be well received socially, with little risk of social barriers. The

availability of pigs to meet social obligations is culturally important, but stakeholders consulted during the PPG phase all considered that it would be socially beneficial for this availability to be ensured through enclosed systems rather than through allowing pigs to roam free, given that they destroy crops and backyard plants, as well as damaging the environment, sanitary conditions and aesthetic values in the villages. Enclosed management would generate major benefits as it would allow community members to plant whatever they want to plant in their home gardens and tax allotments without the risk of pig damage.

160. In addition to reducing crop damage in the target villages, the system has the potential to generate cooking gas as a convenient alternative to existing energy sources (these include firewood harvested from coastal forests and the limited other forest remnants, fallow vegetation and other agroecosystem residues such as coconut husks); these socioeconomic benefits will contribute to farmer buy-in to these systems. The conversion of pig waste into biogas in this way also has climate change benefits as it replaces methane emissions from pigs with CO₂, a less damaging greenhouse gas (GHG). The basic equipment needed for cooking with biogas and lighting homes would be provided to each participating household under the project (e.g. biogas meter, biogas scrubber, stovetop burner, light fixtures, bulbs, pipes, etc.), with the expectation that the purchase of any additional or replacement equipment would be the responsibility of the household. As noted above, training will be provided in all areas relevant to building and maintaining the integrated system.

Box 3. Technical and environmental aspects of piggery systems

The design construction, operation and maintenance of Piggery/Biogas systems, as integral component of the integrated agro-ecosystem will be determined by the ILAMPS, including the number of pigs to be penned, types, and location of the piggeries relative to the locations of dwellings and the rest of the agro-forestry intercropping system.

A typical piggery biogas system will include three or more concrete pens with drainage trough for manure, a wooden shelter, rainwater harvesting gutters and tanks, a fenced pen, the pipes and tanks for the biogas digester, and pipes to channel the resultant biogas to the cooking area (See Appendix 7 for more details on system design).

An initial requirement for the successful establishment of the pilot piggeries will be an external supply of feed. However, once the piggeries are established, the pressures of roaming pigs on the local environment will be eliminated, allowing agricultural production to recover and generate a surplus of fodder and root crops that in the long term will constitute a sustainable substitute to the donated feed. This feed will be complemented by other sources such as coconuts and breadfruit, availability of which will be increased through the project's investment in forestry and agroforestry; other agricultural feed such as cassava leaf silage; and by-products of the processing of agricultural products such as the extraction of virgin coconut oil in the processing plant at Tatakomotonga, East of Nuku'alofa on Tongatapu²³.

Penning the pigs will naturally require a consistent supply of water. An important part of ILAMPs therefore is to minimize the impacts and added pressure of penning pigs on existing water supplies by harvesting rainwater from piggery and other dwellings rooftops. Water storage in its various forms can increase water security, agricultural productivity and adaptive capacity of the communities. A key component of water storage however, is rainfall variability, which can be a major constraint to the success of adopting ILAM practices. Nearly two-thirds of Tonga's rainfall falls in the wet season from November to April, and has high variability from year-to-year due mainly to the El Niño-Southern Oscillation. Given the high rainfall variability, it is crucial that water storage capacity be increased to meet the extra demand from the piggeries. In the development of ILAMPs, the available areas of rooftops (on piggeries, houses and all other dwellings) and location will determine the sizes and number of water storage tanks to be used for rainwater harvesting.

²³ <http://www.oxfam.org.nz/what-we-do/where-we-work/tonga/improving-livelihoods#sthash.aIRkukIE.dpuf>

Box 4. Basic yield estimates of biogas systems

1m³ of biogas will be able to:

- run a 2 horse power engine for app. 1 hour
- illuminate a mantle lamp equivalent to 60 watts for app. 7 hours
- run a 300 litre refrigerator for app 3 hours
- generate app. 1.25 KW electricity
- cook 3 meals for a family of 4 (gas burner)

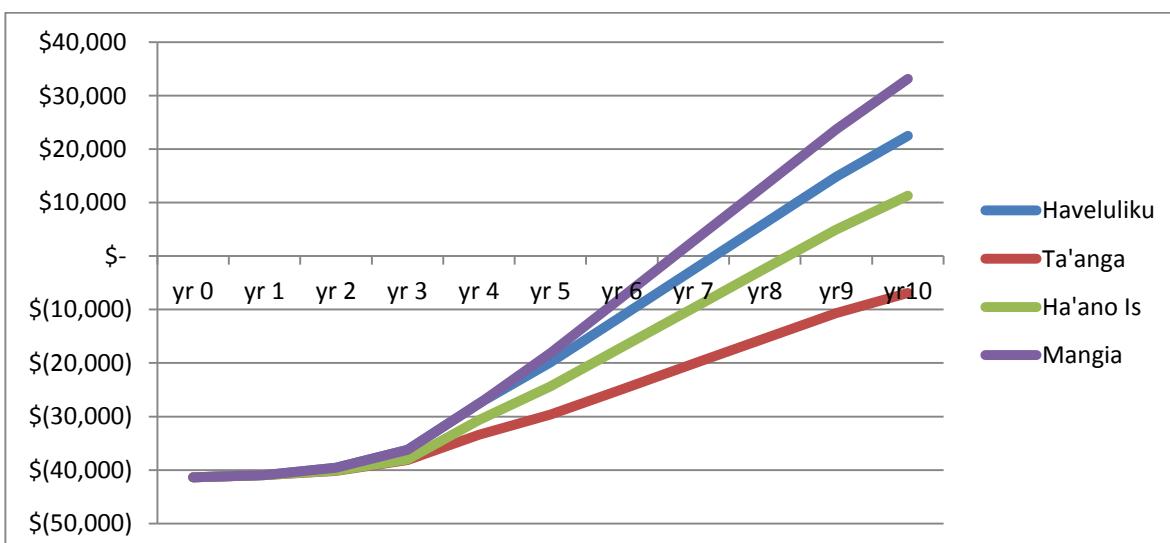
Calculation parameters

- | | |
|---------------------------------|-----------|
| • Retention time | 40 days |
| • Temperature | 27°C |
| • Output biogas per kg pig dung | 45 litres |
| • Output dung per adult pig | 2.5 kg |

A good digester will have approximately 40 days retention time of the animal waste, i.e. the waste will stay within the BD for 40 days before it is expelled, causing harmful bacteria to be broken down. The optimum temperature to achieve this is 27°C. In relation to the outputs, 1 kg of pig dung is expected to produce 45 L of biogas and each adult pig is expected to produce 2.5 kg dung per day.

161. Projections of the economic viability of the piggery/biogester systems are shown in Figure 6, with detailed explanation of the basis of the calculations in Appendix 7. These projections suggest that in both Mangia and Haveluliku villages, investment costs will be recovered after 6-7 years, and in Ha'ano after 7-8 years. In Ta'anga village, on the other hand, it will take more than 10 years to recover the costs of the investment. The main factor determining how quickly the breakeven point is reached is the number of households in each site: this limits the total amount of benefit that can be generated per village/digester, assuming that the assumed percentage increases in income per household resulting from the systems are at their maximum feasible levels²⁴.

Figure 6. Project net cash flow for piggery/biodigester systems



²⁴ The calculations shown assume zero opportunity cost for village labour. In the case of Haveluliku, for example, the inclusion of a \$2,200 annual labour cost would delay the breakeven point from year 7 to year 10. In reality in the case of the isolated islands and communities in question the opportunity cost of labour is normally negligible.

162. **Integrated crop nutrient management:** the focus of the project will be on supporting the intensification of agricultural production, while avoiding the kinds of impacts on water quality and on coastal and marine ecosystems that are currently caused by the excessive and poorly planned application of inorganic fertilizers (see Section 1.3.1), namely elevated levels of nitrates and heavy metals in groundwater and runoff. The two alternatives considered for achieving this are:

- **Application of organic residues (digestate) from piggeries digesters:** this will improve soil nutrient status at a much lower cost than with inorganic fertilizers, and in addition to adding basic nutrients will increase soil organic matter content and microbial activity; the use of digestate as fertilizer will avoid the risk of livestock waste and raw wastewater generating negative impacts on fragile groundwater supplies and surrounding ecosystems.
- **Use of cover crops:** experiments in Tonga have shown that use of the cover crop *Mucuna cochinchinensis* can contribute significantly to soil nitrogen levels (an input of about 60kg N/ha compared with the guinea grass controls in a maize cropping system), and in yam production ploughing in of the mucuna cover crop increases phosphorus availability equivalent to applying about 50 kg P/ha²⁵.

163. **Agroforestry systems:** increases in the tree component in production systems, under different models of agroforestry, will contribute to nutrient cycling and fixation, improve farmers' access to tree products for consumption and sale (e.g. fruit, firewood and timber), as well as animal feed (e.g. coconuts and breadfruit for use in the piggeries) and generate ecosystem services (e.g. protection against salt spray and wind damage). Wherever possible, these systems and their components will build upon existing practices, including the planting and protection of trees along field boundaries, and sequential fallow-based agroforestry (see Section 1.1.8). The species used may include, for example, timber trees such as sandalwood; familiar fruit trees such as breadfruit, coconut, papaya, soursop, avocado, mango and citrus); and fallow species such as *Bischofia javanica*, which is one of the most commonly protected trees in fallow areas in both Tonga and is considered to enhance soil fertility²⁶.

164. Emphasis will be placed in particular on agroforestry elements with which women are traditionally involved and which therefore have the potential to yield differential benefits for their economic status, such as pandanus, paper mulberry and vanilla.

165. **Home gardens:** the project will also support women groups with home gardening for vegetables, fruit trees, and ornamental replanting around the homes. This would improve home nutrition and beautification. A list proposed food crops, fruit trees to be supported under this component is summarised in Annex 5.

166. **Rainwater harvesting systems:** rainwater will be harvested with two objectives: 1) to supply the piggeries, in order to avoid these placing additional demands on community water resources, which are already scarce during drought periods; 2) for the irrigation of small-scale vegetable gardens (it is unlikely that storage capacities and labour availability would be sufficient to permit larger scale irrigation of agricultural crops).

167. It is foreseen that rainwater will be collected from corrugated iron roofs and channelled from there via gutters to ferrocement holding tanks. In order to minimise the risk of these acting as foci for the propagation of malarial mosquitos, these will either be covered or fish will be introduced into them.

168. The precise designs of the rainwater harvesting systems will be confirmed as part of the ILAM Plans to be developed under Output 2.1.2. This is proposed as the rainwater harvesting systems have to be site-specific to take into account the available areas of rooftops (on piggeries, houses and all other dwellings) and location of these rooftops, which will determine the sizes and number of water storage tanks to be used for rainwater harvesting.

Outcome 3.1: Increased capacities in Government institutions and NGOs for identifying and supporting

²⁵ Halavatau S. and Asher C.: Apparent Release of Native Soil Phosphorus by Cover Crops of Mucuna

²⁶ <http://archive.unu.edu/unupress/unupbooks/80824e/80824E03.htm>

SLM practices

Output 3.1.1: Training modules for extension agents

169. In order to promote long-term scale-up of the SLM practices and approaches, the project will raise awareness and technical knowledge among extension agents in Government and NGOs (“training the trainers”), thereby equipping them to continue and expand their provision of advisory support and technical assistance to producers beyond the life of the project. This training will focus not only on specific technical considerations, but also on raising conceptual understanding of the importance of integrated agroecosystem and ridge-to-reef approaches.

- *Activity 3.1.1.1:* Detailed analysis of capacity development needs
- *Activity 3.1.1.2:* Design and development of training modules and materials
- *Activity 3.1.1.3:* Realization of training sessions
- *Activity 3.1.1.4:* Follow-up evaluations and ongoing on the job support

Output 3.1.2: Manuals for use by extension agents

170. Institutional uptake and capacities to support the scale up of SLM practices will further be consolidated through the production of extension manuals, containing conceptual and technical guidance for current and future extension agents on how to support local communities in formulating and applying the practices.

- *Activity 3.1.2.1:* Review of existing materials, and discussion of needs, content and format of materials with extension agents and community members
- *Activity 3.1.2.2:* Drafting, design and publication of materials
- *Activity 3.1.2.3:* Participatory validation of materials with extension agents and target communities.

Outcome 3.2: Increased capacities in local communities to develop, apply and adapt SLM practices

Output 3.2.1: Demonstration modules for integrated agroecosystem management systems

171. Demonstrations of integrated agro-ecosystem management systems will be established in eight villages (two in each of the four selected target areas described in Section 1.2), the locations of which have been selected to optimize their demonstration potential. In order to maximise their demonstration potential, the specific farms on which demonstrations will be established will be determined on the basis of the following criteria,:

- Location – need to have connectivity with ecosystems at higher landscapes and coastal areas to meet R2R objectives.
- Available land – need legal proof for tax allotment of 8 acres.
- Existence of problems - with roaming livestock, soil degradation/erosion, coastal erosion, degraded forest landscapes and associated loss of biodiversity and ecosystem services, and limited access to energy and water supply.
- Farmer commitment - strong interest and commitment by participating farmers to adopt and to be part of a community of practice to promote ILAM practices.

172. In addition, the specific locations and nature of the demonstrations will be discussed in collaboration with MAFFF extension agents in the district in question, and, more importantly, with the members of the target communities. This will help to ensure buy-in to the initiatives by the community as a whole, and thereby increase the probability of upscaling throughout the community and beyond. The demonstrations will also be established in accordance with the provisions of the land use and integrated agroecosystem management plans to be developed under Output 2.1.2 above, or at least with the discussions leading up to the formulation of the plans (given that the plans will not yet have been developed by the time the project starts).

173. Sustainability and upscaling will be furthered by also establishing demonstrations at Tupou College on Tongatapu, and at Hango Agricultural College on ‘Eua, specifically targeting the students there, who

will be farmers and extension agents in the future, in order to raise their awareness of the importance and technical aspects of ILAM approaches and practices.

174. Project support to these demonstrations will include concrete investment (as needed), for example in the construction of piggeries and associated biogas digesters and rainwater capture systems (see Box 3), and planting material and equipment for the establishment and management of agroforestry systems; the provision of technical advice to the planning and management of the systems; and the production of training and interpretation materials and facilities.

- Activity 3.2.1.1: Confirmation of nature and specific locations of proposed demonstrations, in discussion with extension agents and local communities
- Activity 3.2.1.2: Design of demonstrations, with local participation and specialist technical inputs, including technical specifications (as needed), work plans and investment/procurement plans
- Activity 3.2.1.3: Establishment of demonstrations with full local participation
- Activity 3.2.1.4: Production of materials and plans for interpretation, systematisation and dissemination

Output 3.2.2: Farmer field schools for participatory problem analysis and development of SLM practices

175. In order to maximize the chances of adoption, adaptation and upscaling of the ILAM practices beyond the leader farmers specifically targeted by the demonstrations, the project will facilitate participatory learning and knowledge transfer through the use of the Farmer Field School (FFS) model. This will provide a forum for others in the community (including those with more limited access to resources and less secure tenure than the leader farmers) to analyse how to adapt the practices to their own specific needs and conditions.

- Activity 3.2.2.1: Participatory planning of FFS, including expressions of interest in participation by diverse community members;
- Activity 3.2.2.2: Facilitation of FFS, including provision of materials and equipment as needed.
- Activity 3.2.2.3: Facilitation of participatory systematization of results of FFS.

Output 3.2.3: Extension modules applied in target communities

176. In addition to the demonstrations and FFS described above, the project will develop the capacities of MAFFF agents for the delivery of extension support to farmers in the target communities. The training could include, but are not limited to, the following:

- Piggery/biogas and rainwater harvesting system construction, operation and maintenance and monitoring.
- Balancing water sources and supply with water use and demands.
- Agronomic value of effluent and sludge from the biogas plant as organic fertilizer for a range of crops and trees – application rates and concentrations.
- Pig Feeding Management, improve breed, and pig husbandry.
- Integrated crop management techniques for vegetables, fruit trees, and fodder crops including improve varieties, soil fertility, pests and diseases, irrigation, etc.

177. The training sessions will be developed and delivered by MAFFF technical staff with the support of technical experts from contracted service providers, SPC, FAO, Tupou College in Tongatapu, and Hango Agricultural College in 'Eua. A Training-of-Trainers (ToT) approach would be used to enable MAFFF staff based in the outer islands to receive the training together in Tongatapu and then be able to deliver the training in the pilot villages, with additional technical support from MAFFF HQ as needed. After the first pilot villages have successfully implemented their integrated systems, it is envisioned that additional villages would be added and representatives of these second phase villages would visit the pilot villages as a study tour in conjunction with MAFFF staff to learn first-hand from their fellow farmers the challenges and benefits of the integrated systems.

178. The training will place emphasis on building capacity of the Village Agriculture Committee (VAC) in

each village to enable them to take responsibility for the implementation and monitoring of the ILAMP at the village level.

- Activity 3.2.3.1: Participatory identification and characterization of target audience, and analysis of capacity development needs.
- Activity 3.2.3.2: Design of training modules with participation of extension agents and community members.
- Activity 3.2.3.3: Delivery of training modules, following initial validation and adjustment as needed.
- Activity 3.2.3.4: Participatory monitoring of training effectiveness.

Outcome 3.3. Increased capacities for the formulation and implementation of forest restoration plans, and for supporting improved management of forests, mangroves, and trees outside forests.

179. Activities under this outcome will focus on strengthening the capacities of the MAFFF Forestry Division to support the formulation and implementation of operational plans for forest restoration and implementation of priorities areas in the national strategic plan (output 1.3.1) and increase the overall number of “trees outside forests” planted on individual plots of land, and planted as key component of integrated agro-forestry systems, including trees for marking borders and as shade for crops. The targeting of this support will be guided by priorities identified in the Community Development Plans developed under the IFAD-funded TRIP project, and finalised in consultation with Forest Division and the MORDI Tonga Trust, which will be a partner agency for the delivery of this outcome.

Output 3.3.1: Operational plans for forest restoration, including mangroves, formulated and implemented

180. Building on the lessons and good practices to date, the project will apply the mapping capability of Tonga SOLA (to be strengthened under Activity 1.1.1.3) to support the prioritization and development of forest rehabilitation and management plans, including mangroves and other coastal forests.

181. The project will, in close collaboration with the other national R2R project by UNDP, disseminate the integrated environmental management tools and methodologies developed at the Fanga’uta Lagoon catchment on Tongatapu island. The application of the mapping capability of Tonga SOLA to support rehabilitation of mangroves in coastal areas will focus on areas where there are hydrologic and ecological connectivity with areas where ILAM practices will be piloted and demonstrated. The project activities will also be carried out, closely linked to, and in collaboration with, the identification of priority areas for mangrove rehabilitation and protection expected to be undertaken by the Climate Change and Environment Divisions under the auspices of the ADB-funded Strategic Programme for Climate Resilience (SPCR) and with the mangrove rehabilitation work currently being planned under the GIZ funded programme on Adaptation to Climate Change and Sustainable Energy (ACSE).

- Activity 3.3.1: Identify priority forest areas for rehabilitation and management in the National Strategic Forestry Development Plan
- Activity 3.3.2: Develop operational plans for priority areas in the National Strategic Forestry Development Plan
- Activity 3.3.3: Implement key priorities for forest rehabilitation
- Activity 3.3.4: Identify priority areas of mangrove forests under most threat from upstream agricultural activities
- Activity 3.3.5: Develop operational plans for protection and rehabilitation of priority areas of mangrove forests, excluding Fanga’uta lagoon.

Output 3.3.2: Systematisation of traditional tree management systems

182. Wherever possible, the project will emphasize the adaptation and strengthening of existing tree management systems, before supporting more conventional approaches based on the establishment of nurseries and the planting of trees. Participatory approaches such as Participatory Rural Appraisal and Farmer Field Schools will be used to review, analyse and systematize these systems, with an emphasis on assessing how well these systems are capable (currently, or with modifications) of meeting community

members' needs in the face of changing socioeconomic, productive and biophysical conditions.

- Activity 3.3.2.1: Participatory discussion and design of systematization methods
- Activity 3.3.2.2: Community-level exercises and farm visits for participatory systematization of tree management systems
- Activity 3.3.2.3: Facilitation of participatory documentation of systems
- Activity 3.3.2.4: Participatory feedback, validation and discussion of implications of results of systematization.

Output 3.3.3: Sustainable Forestry Management Agreements

183. The Forest Department and interested landowners will develop, agree and sign Sustainable Forestry Management Agreements (SFMAs) to form the basis for receiving training, seedlings, and tools. These will be based on initial diagnostics of needs and opportunities for improving tree management in the target communities (including the systematization of existing traditional tree management systems proposed above under Output 3.3.1); characterization of farmers' needs for trees and their products; analysis of current difficulties in satisfying these needs, and their causes; and participatory inventories of existing tree species and their propagation requirements.

- Activity 3.3.3.1: Facilitation of participatory diagnostics of needs for improving tree management and characterization of farmers' needs for trees and their products, analysis of current difficulties in satisfying these needs, and their causes; and participatory inventories of existing tree species and their propagation requirements.
- Activity 3.3.3.2: Negotiation of terms of SFMAs, and signing of agreements.

Output 3.3.4: Improved mechanisms for supply of tree seed and planting materials

184. MAFFF is currently unable to meet demand for seedlings, particularly for high-value species like sandalwood. Based on the participatory analyses proposed under Output 3.3.2 above, the Forestry Division will support farmers in defining how to meet their needs for tree seed and planting materials: this will focus, for example, on the most appropriate techniques for regeneration (e.g. potted planting stocks, live stakes, direct sowing or assisted natural regeneration), and where seed are required, whether to collect them locally or obtain them from the Forestry Division.

185. For those cases where tree seed are needed, the project will support the Forestry Division in designing seed supply mechanisms, including for example either centralized or village level seed orchards/stands, and providing for the logistics of transporting seed to remote locations, when necessary. Nurseries will be improved or established (for example in Ha'apai, where the existing nurseries were destroyed during Cyclone Ian), with a focus on using appropriate technology methods for propagation, shade and watering in order to minimize needs for external support and thereby contribute to sustainability.

- Activity 3.3.4.1: Participatory review of needs for tree seed and planting materials, linked to the tree management diagnostics under Output 3.3.2.
- Activity 3.3.4.2: Advisory support to design/improvement of systems for supply of tree seed and planting materials
- Activity 3.3.4.3: Facilitation of the planning of village level nurseries, including organizational and technical aspects and provisions for sustainability
- Activity 3.3.4.4: Support (advice and materials) to the establishment and management of village level nurseries

Output 3.3.5: Training modules on forest restoration and management, for Forestry Division staff and community members

186. Training modules will be developed and applied with staff members of the Forestry Division and members of the target communities, focusing on aspects of basic forest management and establishment, integrated agro-forestry development and management, and the importance of forest ecosystems in building resilience to climatic and other shocks. Specific technical issues to be addressed will include

options for tree propagation, establishment and management, including seed production, handling and supply, appropriate technology nursery practices, plantation establishment and management under different silvicultural regimes, and agroforestry systems. Training will also be provided for Forestry Division staff on approaches to the analysis of tree management systems and needs, including participatory approaches to appraisal.

- Activity 3.3.5.1: Participatory identification and characterization of target audience, and analysis of capacity development needs.
- Activity 3.3.5.2: Design of training modules with participation of extension agents and community members.
- Activity 3.3.5.3: Delivery of training modules, following initial validation and adjustment as needed.
- Activity 3.3.5.4: Participatory monitoring of training effectiveness.

Component 4: Knowledge Generation and Dissemination and Monitoring and Evaluation.

187. This component will link information generated through the project with that generated through existing information systems on biodiversity conservation, forest management, best practices for land management, marine ecosystem management, climate change threats and other potential risks. A special focus will be on disseminating the results from integrating data and information into more user-friendly access facilities such as GIS mapping. The objective is to establish a cost-effective monitoring capacity and structure that support adaptive project management, leading to the successful implementation of the project.

188. Promising practices and lessons learned from the pilot initiatives will be widely disseminated through the regional learning network, in close collaboration with the regional R2R project executed by SPC/SOPAC 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.

Outcome 4.1 Project implementation is based on results-based management and application of lessons learned and good practices in current and future interventions.

Output 4.1.1: Monitoring and evaluation system established, supporting adaptive project management
189. The effective implementation of the project will require the development and execution of a project monitoring and evaluation system, including internal measurement of project indicators on regular basis as prescribed in the results framework, as well as external evaluations at project mid-term and end. The Project Monitoring and Evaluation System will provide members of the Project Management Unit, MAFFF and other partners with systematic and timely information on implementation progress in delivering on outputs and outcomes. The Mid-term Evaluation report will provide an independent assessment of project activities and recommendations for improving project performance. The Final Evaluation report will assess the extent to which the project delivered on expected outcomes and provide recommendations for future activities.

- Activity 4.1.1.1: Develop and implement a project M&E system, including provisions for M&E results to support adaptive management

Output 4.1.2: Mechanisms for effective management and dissemination of knowledge within Tonga and the region

190. The production of technical and project progress reports and corresponding awareness materials, will be disseminated within Tonga via MAFFF website (www.mafff.gov.to) and the Environment and Climate Change portal (www.ecc.gov.to) and other communication channels, such as Church Newsletters, Radio, TV, etc. as appropriate. At the regional level, the project will report to the annual R2R Project Steering Committee meetings as well as relevant SPC/LRD and SPC/SOPAC, and SPREP meetings and

workshops.

191. The project results and outputs will also contribute to Tonga's input and participation at the bi-annual Pacific Climate Change Roundtable (PCCR) and to be shared at IW-Learn regional workshops.

- Activity 4.1.2.1: Design and establish knowledge management and dissemination systems
- Activity 4.1.2.2: Develop knowledge and communications products for dissemination of knowledge, lessons and good practices within Tonga and across the Pacific.

1.4.4 Global environmental benefits

192. The project will generate significant global environmental benefits for each of the three targeted focal areas:

Land Degradation:

193. In accordance with Objective LD1, the project will maintain and improve flows of agroecosystem services sustaining the livelihoods of local communities, and in accordance with Objective LD3 will help to stabilize land use change processes in the target areas. The ecosystem services in question will vary between project localities: reductions in watershed deforestation caused by agricultural encroachment, as demonstrated on 'Eua island, will help to ensure continued and stable access to water supply by coastal communities; while improved protection and restoration of coastal forest and mangroves will result in maintained ecosystem services in the form of protection against crop damage from salt spray, wave impact and sea level rise, as well as maintained ecosystem function given the importance of mangroves as breeding and grow-on habitats for fish and other marine life of economic and/or subsistence value. The application of the R2R approach will be of key importance in generating these benefits, which are related to flows of ecosystem impacts and services across the landscape and between its terrestrial and coastal/marine components.

194. Another LD target under GEF-6 is reduced GHG emissions from agriculture. The enclosed management of pigs and the operation of associated biodigesters will result in the substitution of methane emissions by CO₂, which is less damaging as a GHG.

195. Improved land management, for example through integrated nutrient management (including increased use organic fertilizer, cover crops and agroforestry trees) will furthermore contribute to ensuring land productivity in the long term, and its ability to continue to generate productive benefits for local people.

196. The quantitative targets of the project in terms of LD benefits, under Outcome 3.2, are as follows:

- 75% reduction in the areas of crops damaged by roaming pigs (the total area benefitting from reduced degradation over the life of the project will be 245ha);
- 30 farmers in each target locality with 15% increases in crop yields over 100ha.

Biodiversity:

197. Improved protection and restoration of remnant forests associated with the target production landscapes will result in increased availability and intactness of habitat for elements of the country's globally important biodiversity. These include the Tongan whistler (*Pachycephala jacquinoti*), which is endemic to the islands of Vava'u (one of the project's target localities) and Late, and which is mainly found in tropical primary forest, but can sometimes be seen in second growth or wooded plantations. Project actions on the island of 'Eua have particular potential to yield biodiversity benefits: the IUCN Vulnerable conifer *Podocarpus pallidus* is endemic to 'Eua and Vava'u (this species is a minor component in broad-leaved tropical forest, and it is assumed there are fewer than 500 mature trees on each island²⁷), and the IUCN Critically Endangered plant *Aglaia heterotricha* is similarly endemic to 'Eua. Protection of coastal forest belts, for example on Tongatapu, will have potential for these to act as 'green corridors' will ultimately protect the natural connection of ecosystem pathways and habitats that are vital for preserving native flora and fauna. Improved protection of mangroves, as well as reductions in fertilizer inputs into

²⁷ <http://threatenedconifers.rbge.org.uk/taxa/details/podocarpus-pallidus>

lagoon ecosystems, will contribute to the overall functionality of coastal and marine ecosystems and their associated fauna.

198. The NBSAP also classifies seven of the country's 153 identified agricultural species as critically endangered and 104 as rare; the project's focus on participatory approaches to technology development and on building on traditional practices and knowledge will contribute to the maintenance of these species.

199. The following project targets constitute quantitative proxies for the project's BD impacts in terms of improvements in habitat and ecosystem status:

- Outcome 2.1: No new instances of clearance of forests in the watershed for agriculture
- Outcome 3.2: 225 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their farms
- Outcome 3.2: 75% reduction in the amount of fuelwood collected from vulnerable areas
- Outcome 3.3: 100ha agricultural land returned to forest use in the target localities.

200. The total area over which the project will contribute to the improvement of conditions for biodiversity is estimated at 6,180ha, which is the sum of the areas affected by improved agricultural and integrated agroecosystem management practices, improved forest management (in the 'Eua watershed forest), restoration of degraded lands, and re-vegetation or reforestation (see Table 10).

Sustainable Forest Management:

201. The improved protection of watershed and coastal forests, and mangroves, will contribute to the SFM1 objective of reducing pressures on forest resources and generating sustainable flows of forest ecosystem services.

202. This will lead to the benefits for vegetation cover as shown in:

Table 8. Project benefits in terms of vegetation cover

Type of benefit	Area (ha)	
	4 year horizon	10 year horizon
Avoided encroachment on 'Eua. The total land available to Tonga community below the watershed is 75ha, of which 50ha is currently under crop. This means 25 ha can be avoided from encroachment and be rehabilitated at the water catchment if the equivalent amount of land is made available for cropping when pigs stop degradation and ruining of crops.	10	25
Area of 'Eua watershed rehabilitated as part of the forestry strategy implementation	28	70
Area under agro-forestry, or with a 20% increase in number of trees (indicators under Outcome 3.2)	36	90
Area of agricultural land returned to forest (indicator for outcome 3.3)	40	100
Area of land currently degraded by roaming pigs, which becomes more productive for crops.	62	155
Total	176	440

203. This will result in an eventual reduction in GHG emissions equivalent to an estimated 130,551tCO₂eq, as shown in Table 9.

Table 9. Calculations of avoided emissions (all figures in tCO₂eq)

	4 year (end of project) horizon (implementation phase)			10 year horizon (capitalization phase)		
	Without	With	Balance	Without	With	Balance
Gross fluxes						
Land Use Changes						
Deforestation	95,314	73,024	-22,289	238,284	182,561	-55,722

Afforestation	-4,860	-28,644	-23,784	-12,151	-71,610	-59,459
Other LUC	0	-1,864	-1,864	0	-4,660	-4,660
Agriculture						
Annual	0	-1,456	-1,456	0	-3,640	-3,640
Perennial	0	0	0	0	0	0
Rice	0	0	0	0	0	0
Grassland & Livestock						
Grassland	0	0	0	0	0	0
Livestock	632	700	68	1,580	1,750	171
Degradation and Management	0	-2,968	-2,968	0	-7,421	-7,421
Inputs & Investments	0	0	0	0	0	0
Total	89,085	38,864	-52,220	222,712	97,161	-130,551
Per hectare	58	25	-34	146	62	-84
Per hectare per year	14.6	6.2	-8.4	14.6	6.2	-8.4

Climate Change:

204. The project will not use GEF resources from the Climate Change Mitigation (CCM) focal area; however the piggeries (the main objectives of which will be to reduce land and habitat degradation caused by roaming pigs and to generate organic fertilizer as an element of integrated nutrient management) will incidentally generate CCM benefits through the use of methane as biogas. This will result in the methane being converted through combustion into the less damaging GHG gas CO₂ rather than directly emitted to the atmosphere; at the same time, it will reduce the levels of CO₂ emissions from bottled gas and firewood (currently derived from fossil fuels and woodland sinks respectively), as these energy sources will be substituted in part by the biogas.

205. The amount of methane emissions avoided through the use of biodigesters to convert pig waste into biogas is estimated at 247tCO₂eq/year, or a total of 988tCO₂eq over the duration of the project, based on the assumptions shown in Box 5.

Box 5. Basis for the calculations of CCM benefits due to the use of biodigesters

- Total 400 pigs will be penned at all the project sites at any one time (40 x 10 digesters)
- 2.5kg manure/pig/day (see Box 4) = 1,000 kg manure/day = 1 m³ manure/day
- 40 days retention = 80 m³ volume digester
- 50% conversion CH₄ production = 40 m³ CH₄/day
- 0.0169 conversion factor (source: <http://www3.epa.gov/gasstar/tools/calculations.html>) = 0.677tCO₂eq/day = 247tCO₂eq/year = 2,470tCO₂eq over the 10 year lifetime of the a biodigester.

206. There is a degree of overlap between the area targets for these three focal areas, reflecting the interrelatedness of the environmental benefits. The relations between these figures are explained in Table 10.

Table 10. Summary of key area figures and their references in Project Document and Tracking Tools (TT)

Factor	Area (ha)
1. Improved agricultural management (crop and crop-livestock) (LD TT): area of tax allotments in target localities on which integrated agroecosystem management practices are applied	750
2. Improved forest management (LD TT): the area of 'Eua watershed forest	350
3. Tropical moist broadleaf and mixed forestland (BD TT)	
4. Restoration of degraded lands (LD TT): total area in target localities benefiting from reduction of damage from roaming pigs	5,000
5. Re-vegetation, Reforestation (LD TT): area with active tree planting in target localities	80
6. Extent of landscape where the project will directly contribute to biodiversity conservation (BD TT): Total of 1-5	6,180

7. Extent of landscape where the project will indirectly contribute to biodiversity conservation (BD TT)	3,090
8. Avoided deforestation and forest degradation (direct lifetime) SFM TT	25
9. Avoided encroachment on 'Eua (Table 8)	
10. Area of 'Eua watershed rehabilitated as part of forestry strategy implementation (Table 8)	70
11. Area under agro-forestry, or with 20% increase in tree numbers (Indicator for Outcome 3.2, Table 8)	90
12. Area of agricultural land returned to forest (Indicator for Outcome 3.3, Table 8)	100
13. Area of land currently degraded by roaming pigs, which becomes more productive for crops (Table 8)	155
14. Conservation & enhancement of carbon in forests (SFM TT) = total of 9-12	415

1.4.5 Project assumptions

- 1) **Local community collaboration:** collaboration of local communities will be critical to achieving the objectives of the project. This will be ensured through the promotion of effective participation and consultation of community members, and the generation of tangible socioeconomic benefits for the target communities.
- 2) **Government buy-in:** this will be ensured through the policy advisory support provided by the Project Manager and international Policy Consultant, and more importantly through the effective channeling to policy and decision makers in Government of evidence generated at local level regarding the socioeconomic benefits generated by the proposed systems in the short term, the long term sustainability benefits, and the compatibility of the project's approach with national development goals.

1.4.6 Stakeholder consultation and engagement

Stakeholders

207. A list of key stakeholders and their potential roles in the project are provided in the table below. Special attention would be given to youth, women, disabled citizens, and residents of outer islands.

Table 11. Key Stakeholders and Potential Roles in the Project.

Stakeholders	Roles
Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF)	Main implementation partner. Responsible for day-to-day execution, management, and monitoring of project activities. Lead executing agency for Components 2,3, and 4.
Ministry of Lands, Survey, and Natural Resources (MLSNR)	Lead executing agency for activities relating to SOLA under Component 1
Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC)	Lead executing agency for activities relating to mangrove rehabilitation under Component 3
Other Government Ministries (e.g. Internal Affairs, Tourism)	Project beneficiaries (from capacity building) and project partners in implementing project activities in Component 2 & 3
Farmers and village 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: Langafonua 'a Fafine Tonga, MORDI Tonga Trust, Tonga Livestock Farmers Council,	Project beneficiaries (from capacity building) and project partners in implementing project activities
Tupou College and Hango Agriculture College	Project beneficiaries (from capacity building) and project partners in implementing project activities

Stakeholders	Roles
Other sectors include tourism, health, local business, investors	Project partners in implementing activities, including those related to tourism and solid waste management

ILAMS Project Beneficiaries

208. The project is expected to provide both direct and in-direct benefits to a wide range of stakeholders, as follows:

- 60 government staff trained in Land Management and Administration, Forest Monitoring, GIS, Biogas Production, Piggery Management, or Agro-forestry
- 5,000 land owner's records secure and digitized
- 1,000 students at Tupou College learn how to operate a piggery/biogas system, including fodder crops, organic fertilizer and other integrated approaches
- 130 students at Hango Agricultural College learn how to operate a piggery/biogas system, including fodder crops, organic fertilizer and other integrated approaches
- 575 people in four pilot communities benefit from piggery/biogas systems and improved integrated agro-ecosystem planning and management, including at least 50% women
- 500 farmers in 15 villages receive training, tools and seedlings for improved agro-forestry, including at least 50% women
- 5,000 residents of 'Eua benefit from sustained access to water from the 'Eua Watershed
- 300 people in the four pilot communities benefit from reductions in coastal erosion due to rehabilitation of mangrove forests, including at least 50% women
- 5,000 households benefit from fruit trees, mangroves, and forest tree replanting support
- 20,000 Tongans receive information and knowledge about the benefits of an integrated agro ecosystem approach to farming, livestock management, forests, and land management through awareness campaigns

Stakeholder engagement

209. One of the key lessons learned from previous community-level interventions in Tonga is the need to build consensus and commitment within participating communities. In addition to being essential for promoting negotiation and sustainability as key elements of land planning and management decisions, this participatory approach will help to ensure buy-in and ownership of the project itself by community members, which is crucial to their adoption of the proposed integrated agro-ecosystem management systems. This will require participatory meetings, workshops, training and awareness raising, including spatial planning at community/household/group level and community agreements on objectives and roles and responsibilities in the implementation of the project. Use wherever possible of existing mechanisms for organization, representation and dialogue such as Village Agriculture Committees (VAC) and community meetings (fonos).

210. Real and effective stakeholder participation will be particularly central to the project's approach under Component 2. Under Output 2.1.1, the project will seek to maximize the engagement of local stakeholders in processes of land use planning and resolution of tenure issues, by facilitating multi-stakeholder negotiation of resource management and tenure arrangements using the approach of participatory and negotiated territorial development (PNTD). This will involve supporting community members in carrying out initial diagnostics of their interests and visions regarding the management of their territory, and commencing dialogue; initial discussion of proposals for the management of the territory; and facilitating negotiation between the actors with the aim of, wherever possible, achieving consensus-based agreements. These actions will build on progress made to date with the building of relations of trust with local communities, with support from IFAD and other agencies.

211. A similarly participatory approach will be applied under Output 2.1.3 in order to maximize stakeholders' engagement in the formulation and implementation of the 'Eua Watershed Management Plan. In this case the project's actions will build upon the bases of trust, participation and engagement

established through actions supported by GIZ on this island; GIZ will continue to provide advisory support to the project in order to ensure the continuity of the participatory approach applied there.

212. Stakeholder engagement in the actions proposed under Component 3 will be promoted through a participatory approach to extension, including the use of: Farmer field schools for participatory problem analysis and development of SLM practices (Output 3.2.2) and the systematisation of traditional tree management systems (Output 3.3.2) as the starting point for the promotion of improved tree management and restoration.

213. Actions under Component 4, meanwhile, will focus on knowledge management, including the effective systematization and dissemination of results lessons learned at field level. This knowledge and messages will be fed to actors with influence on policy and regulatory frameworks, and technical support, thereby promoting their engagement and motivating them to take effective action, especially under Component 1.

1.4.7 LESSONS LEARNED

214. Lessons to date from Mainstreaming of Rural Development Innovation (MORDI) and Tonga Rural Innovation Project (TRIP) indicate that there is one key approach that is essential if development is to be sustainable. This is the importance of building community buy-in, cohesion and capacity before commencing to implement development activities. MORDI and TRIP take from nine to 15 months to instigate and then build rural community capacity and ownership as an essential precursor to activity implementation. The ILAMS project will build this community cohesion and capacity in pilot villages through the development of the Integrated Land and Agro-ecosystem Management Plans (ILAMPs). The ILAMP will provide details on activities to be undertaken by the project, including roles and responsibilities of community members and project executing agencies.

215. A critical lesson was learned from the implementation of an FAO Telefood project under which a communal piggery was established for an entire community. Over time, households in the community refused to place their pigs in the communal piggery due to distrust of the owner of the land on which the piggery was established. The ILAMS project will only support shared piggeries if participating households agree, in writing, to take responsibility for the upkeep of the piggery as per the ILAM Plans.

216. The GIZ project supporting the creation and management of the 'Eua Watershed found that a key mechanism for convincing encroaching farmers to leave watershed lands was to allow them to harvest their existing crops from that land while exploring alternatives to encroaching further into new areas. This strategy will be employed under ILAMS as the Watershed area is enlarged and cleared of further encroachment and the alternatives identified in the ILAM Plans to be developed in areas closer to the villages below the Water catchment.

217. The USAID/SPC piggery project supported farmers in improved livestock management practices. While initial feed for pigs was provided under the project, farmers realized that improved management practices resulted in larger and more frequent litters of piglets, enabling them to sell the surplus piglets to pay for additional feed. The ILAMS project will provide starter feed to farmers and encourage them to cover costs of additional feed, if required, by selling surplus pigs.

1.4.8 ALIGNMENT AND STRATEGIC FIT

b) Alignment with national development goals and policies

218. The proposed actions of the project in relation to land degradation are 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) identified land degradation as a serious environmental problem for Tonga, with priority aspects including 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.

c) Alignment with NAPA, NAPs, NBSAP, NIPs, NAMA

219. The Tonga National Biodiversity Strategic Action Plan (NBSAP) was launched in 2006 and its Fifth National Report to the Convention on Biological Diversity (CBD) was issued in 2014. The project will contribute in particular to the following objectives of the NBSAP:

- 1.1: To minimize the loss and degradation of forest ecosystems and habitats as a result of agricultural expansion
- 1.2: To ensure the optimal and sustainable allocation and use of Tonga's land and natural resources
- 1.3: Community participation to ensure the sustainable management of Tonga's natural resources
- 2.1: To minimize the adverse impact of land based activities on coastal and marine species and ecosystems.
- 4.1: To ensure the protection of viable populations of all priority conservation species of Tonga.
- 5.1: To empower local communities and resource owners to effectively participate in the conservation and the sustainable management of biodiversity resources in areas under their control.

220. 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.

221. Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management (JNAP) 2010-2015: The proposed project responds directly to Goal 4 of the JNAP: "enhanced community preparedness and resilience to impacts of all disasters". The adaptation options in agriculture identified in the JNAP include; Good Farm Planning and techniques (including livestock) and tree management (mixed farming, organic farming, tolerant crops); and stopping allowing animals to roam freely.

d) Alignment with GEF focal area Strategies

222. 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.

223. 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.

224. 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.

e) Alignment with FAO Strategic Framework and Objectives

225. The project is in line with FAO's Strategic Results Framework (2014-2019) and particularly with FAO's Strategic Objective 2 (SO2): *Increase production in agriculture, fisheries and forestry in an economic, social and environmentally sustainable manner*, Outcome 1 (OO1): *Producers and natural resource managers adopt practices that increase and improve the provision of goods and services in agricultural sector production systems in a sustainable manner*; and Outcome 2 (OO2): *Stakeholders in member countries strengthen governance – the policies, laws, management frameworks and institutions that are needed to support producers and resource managers in the transition to sustainable agricultural sector production systems*.

e) Alignment with FAO regional strategy for the Pacific

226. The project is fully aligned with FAO's regional strategy for the Pacific and focuses on two key priority areas which include:

Priority Area 2: Food and Nutrition Security Resilient to the Impacts of Disasters and Climate Change

227. Key Outcome: Increased resilience of local food systems to adverse impacts of disasters and climate change. Attention will also be directed towards improving production and productivity in local food systems (including aquaculture) and strengthen domestic food marketing channels. More equitable access, especially by women and disadvantaged people, to productive resources, including extension and financial services and risk management instruments will be promoted. Integrating young people into farming will also be an important objective.

Priority 4: Environmental Management and Resilience

228. Key Outcome - Enhanced biodiversity conservation and ecosystem services through sustainable resource management. The main output areas will be: improved policy and legal frameworks to underpin PA networks; strengthened capacity for community-based conservation management; establishment of new protected areas; and mechanisms developed for sustainable financing for the PAs.

f) Alignment with FAO Country Programming Framework (CPF) 2013-17

229. The project is fully aligned with FAO's regional strategy for the Pacific and focuses on two key priority areas which include fostering agricultural production and rural development; and enhancing equitable, productive and sustainable natural resource management and utilization. The Project is also aligned to, and contributing to, the FAO Country Programming Framework (CPF) for Tonga (2013-2017)". The broad scope and the integrated nature of this project result with significant contribution and linkages to all the three priority areas and outcomes that Tonga has identified under the CPF 2013-17, as follows:

- **CPF Priority Area A: Policy, Legislation and Strategic Planning and Outcome 2: Strengthened Legislative and Regulatory Framework.** The project will strengthen capacities of relevant ministries for development and implementation of appropriate policies, legislative and strategic framework. FAO will provide technical assistance to support policy formulation, legislation and regulation reviews and strategic planning.
- **CPF Priority Area B: Supply Chain Management and Efficiency and Outcome 1: Enhanced sustainable crop and livestock production.** This integrated crop production and livestock, and forest management will enhance agricultural production for food security and rural livelihoods are a key priority for Tonga. The project will provide improved production and technologies and sustainable farming and husbandry practices supported by appropriate research and information/extension services and enabling policy environment
- **CPF Priority Area C: Environmental Management and Resilience (including disaster preparedness, emergency response and climate change), and Outcome 3: Sustainable**

management and conservation of land resources and biological diversity. This project will directly address nationally recognized and identified issues impacting in the GEF Multi-focal areas of climate change, biodiversity conservation and land degradation. It will help rural communities conserve protected areas and support local communities with alternate sources of clean energy thus improving livelihoods of disadvantaged families through diversified sources of income.

SECTION 2 – INNOVATIVENESS, POTENTIAL FOR SCALING UP AND SUSTAINABILITY

2.1 INNOVATIVENESS

230. 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.

231. By establishing the demonstration sites at Tupou College in Tongatapu, and at Hango Agricultural College in ‘Eua, the project will ensure sustainability by introducing ILAM practices to the youth who are the future farmers of Tonga.

232. 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. A key indicator of success will be positive changes in knowledge, attitudes and actions by communities participating in project activities.

233. 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 SPCR 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.

234. 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, customization of SOLA for national systems of land administration 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 the Regional Office for Asia and the Pacific (RAP) Bangkok and headquarters in Rome.

235. Regarding investments FAO has a long track record in investment projects. Through the Investment Centre Division (TCI) and its more than 80 investment officers FAO is supporting the development, implementation and supervision of investment projects in agriculture and forestry. The FAO-GEF Coordination Unit is based in TCI to ensure the integration of this expertise in the design and supervision of GEF projects, which include technical assistance as well as investment support. The mission of TCI is to provide developing countries with technical assistance to identify and formulate investment strategies and operations for external financing, including environmental and natural resources management projects. The FAO-GEF Coordination Unit specialists provided guidance for the development of this project and will have a key role in support of project implementation.

2.2 POTENTIAL FOR SCALING UP

236. The types of threats described in the target areas are repeated widely across the country albeit with significant local variations in their nature and relative significance. In particular, the land degradation processes caused by roaming pigs, and the barrier to sustainable land management posed by insecure resource tenure, are widely recurring phenomena. The locally-led negotiated processes aimed at achieving rational consensus-based land use planning and improving equity and security of tenure,

proposed under Component 2, are widely replicable across the country once lessons have been generated, learned, systematised and disseminated. Likewise, there is much potential for scaling up the technical solutions. The aim is that the demonstration in the pilot areas, showing the potential for community-managed integrated piggery and digester units to reduce crop damage and land degradation, and to generate biogas for local use, will motivate similar initiatives elsewhere in the country, supported through joint investments by Government, NGOs and community funds.

2.3 SUSTAINABILITY

2.3.1 ENVIRONMENTAL SUSTAINABILITY

237. The project's actions will be environmentally sustainable given that the management and conservation strategies proposed are all aimed at reducing environmental stresses associated with existing production practices. Enclosed pig management will reduce the degradation caused by pigs on land and crops, allowing farmers as a result to grow sufficient surplus to in turn feed the pigs, with no need to expand feed crop cultivation into forest and other vulnerable areas. Piggeries will be established in locations, defined through participatory land use planning processes, where there is minimum risk of any water contamination from effluent runoff; the piggeries will also be design in such a way as to minimize this risk.

238. Environmental sustainability will further be promoted through the application of principles of integrated nutrient and pest management, leading to reductions in the levels of artificial fertilizers and pesticides with potential to contaminate soil and water resources or to affect natural pest/predator balances in agriculture.

239. Emphasis will also be placed on the review, recovery, and adaptation as necessary, of traditional resource management practices in agriculture and forestry, and on the use of familiar and well-adapted native species before considering exotics. This will maximize the compatibility of these systems with local agroecological conditions and therefore their sustainability.

2.3.2 GENDER EQUALITY

240. The project has the potential to generate significant gendered benefits for women, including the following:

- Increase in access to clean biogas for cooking and lighting, thereby reducing their workload in gathering firewood, and improving the home environment.
- Increased opportunities for the generation food and income through small-scale vegetable and fruit production, and improvement of sanitary conditions, due to the elimination of roaming pigs from the village environment.
- Reductions in the impacts of sediment run-off on fisheries in near-shore areas, on which women traditionally depend for household consumption and sale.
- Increased opportunities for handicraft production and other economic activities based on agroforestry products such as pandanus, paper mulberry and vanilla.

241. Furthermore, through facilitation and advisory support the project will seek to ensure that women's interests are represented and addressed in an equitable manner in the participatory negotiation processes proposed under Component 2, while at the same time recognising cultural traditions determining the conduct of public meetings such as these. An international community development specialist will be contracted to provide methodological support to the project for the formulation and implementation of the project's gender strategy, in order to identify means of promoting women's effective participation in these meetings and in such complementary spaces as may be necessary.

2.4 INDIGENOUS PEOPLES

242. There are no separate indigenous groups in the country whose needs require to be given special consideration.

2.5 HUMAN RIGHTS BASED APPROACHES (HRBA). INCLUDING RIGHT TO FOOD, DECENT WORK, ACCOUNTABILITY TO AFFECTED POPULATIONS

243. The focus of the project on supporting the sustainable management of natural resources, particularly within the context of sustainable agriculture, will help to safeguard the target communities' basic rights to food security. The cultural norms and traditions of the target communities will at the same time be respected, through the application of participatory approaches to situation analysis and strategy development. The processes of participatory and negotiated territorial development (PNTD) proposed under Output 2.1.1 will also provide the opportunity to function as feedback mechanisms whereby the participants are able to express their satisfaction or grievances with the project itself; further mechanisms for such representation will include Village Councils, Village Agriculture Committees and, in the case of 'Eua, the 'Eua Inter-sectoral Committee.

2.6 CAPACITY DEVELOPMENT

244. The project will focus on developing capacities at all levels, including policy makers and planners in central Government, technical staff operating at central and field levels, and community members (including traditionally marginalised sectors). Capacity development activities will be defined and planned on the basis of initial needs analyses of each target group, which will in addition consider educational and sociocultural factors, leading to the formulation of differentiated capacity development strategies and plans for each group. Capacity development will, as appropriate, combine conceptual and theoretical as well as hands-on training, with a particular focus on developing capacities for situation analysis, innovation and adaptation. Capacity development activities will be followed up by on-the-job support, involving review of how the stakeholders are applying their capacities in practice and the provision of additional, complementary support as required in order to fill in any gaps.

SECTION 3 – INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS

3.1 ROLES, RESPONSIBILITIES AND COORDINATION

3.1.1 Roles and responsibilities of main institutions

245. The project will be implemented by FAO through the several government agencies that have responsibilities for lands, agriculture, forestry, and environment related issues namely the Ministry of Agriculture & Food, Forests and Fisheries (MAFFF), Ministry of Lands, Survey, and Natural Resources (MLSNR), together with Department of Environment, and the Ministry of Internal Affairs (MIA). MAFFF has overall responsibility for the agriculture, livestock and management of forests and will take overall responsibility for this Project. This responsibility will be held through the key divisions of MAFF which include Extension, Livestock, and Forestry.

246. The Ministry of Lands, Survey, and Natural Resources (MLSNR) will co-ordinate the implementation of Component 1 through its Land Administration and Information Divisions. The Department of Environment will provide support to implementation of Component 3. The MIA will be responsible for coordinating the Project with its programmes to support rural development and economic development in the pilot village communities. These entities will collaborate in many activities, providing technical inputs. It will be a beneficiary of the Project in terms of capacity building. It will also be responsible for mobilizing technical support to the Project's diverse activities.

3.1.2 Coordination with other initiatives

247. The project will rely on guidance and support from the Regional R2R Project in developing knowledge management tools for Ridge to Reef approaches, including tools/processes to build on the previous regional project GEF-UNDP-UNEP Implementing Sustainable Integrated Water Resources and Wastewater Management (PaciIWRM). The Pacific IWRM project supported water governance reform, with most of the participating PICs having established Inter-ministerial Water Committees, developed national water policies, and completed national diagnostic reports for Water, Sanitation and Climate. These accomplishments, as well as a number of successful demonstration projects of ICM and IWRM developed in the Pacific and elsewhere, will be adapted for use in training by Pacific islanders to build local capacity for Ridge to Reef approaches that link coastal systems and catchment areas.

248. This national R2R project also will strengthen Knowledge Management Systems for land and forest Areas. The project will support the establishment and management of databases and other information systems for land resource, designed to support sharing of information, best practices and resources in managing these sites and planning for and implementing island-wide interventions that can benefit multiple sites. The information resources will include: information on relevant laws, regulations, policies, management plans and authorities; the consolidation of existing mapping and GIS information, and any additional data developed by the project. The project also will make sure that national information is shared with and incorporates regional information, in the scope of the regional R2R programme.

249. Project staff will participate in capacity building activities developed by the R2R program. In addition, the national project staffs will participate in the activities of the regional project to strengthen the scientific and technical linkages between Pacific Island Countries for Ridge to Reef approaches. In addition, national stakeholders from the Tonga will participate in the Regional Scientific Conference on coastal and marine spatial planning in PICs, which will support the uptake of regionally accumulated scientific knowledge in policy-making and planning and will facilitate exchanges between government and the scientific community.

250. Coordination with other projects will be assured by the MAFFF and the FAO office in Tonga. The key Government ministries will ensure coordination with national initiatives, whereas FAO and SPC will facilitate coordination with internationally supported initiatives. Regular meetings between MAFFF, FAO and the Project Manager team will monitor coordination and seek ways to optimize it. The Project Manager will be responsible for coordination through her/his ToR.

251. Project implementation 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), Oxfam RESULT programme, and the APEC project.

252. Further, the MAFFF will ensure close consultation and coordination with the other R2R Tonga national project, “Integrated Environmental Management of Fanga’uta lagoon catchment” implemented by UNDP. Collaboration between the FAO and UNDP R2R projects is proposed as follows:

- The UNDP project area will overlap with one of the FAO project target areas, but with an emphasis on different specific technical aspects. The UNDP project will generate lessons on how to address specific coastal BD issues, and fisheries management, within the R2R vision, which may be transferrable to the other target areas of the FAO project; while the FAO project will focus in more detail on farm system aspects. There will be direct collaboration in the provision of training; the UNDP ProDoc says “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”.
- Impact monitoring will be coordinated between the two projects, especially in relation to fertiliser and sediment inputs into the lagoon, which may be influenced by the FAO project.
- The zoning and planning foreseen under Output 2.1.5c of the UNDP project will be closely coordinated and wherever possible integrated with the processes promoted through the FAO project, in order to ensure consistency and help build up a critical mass of trust and awareness more effectively than with parallel initiatives.
- The stakeholder bodies proposed within the “Multi-stakeholder management system” for the lagoon catchment, to be established under the UNDP project, will also be used as channels for stakeholder contact and engagement through this project, and may serve as models that the FAO project could also use elsewhere in the same target area and/or in the other target areas.
- Only the FAO project will work on policy issues, so the FAO project’s policy outcomes (and other “enabling environment” work under Component 1) will have potential implications for the UNDP project and not the other way around. That being said, the UNDP and FAO projects will collaborate in the prioritisation (with local participation) of the specific issues to be targeted in the FAO policy and other enabling environment work.
- It is suggested that the coordinators of the two projects should be invited to participate in each other’s steering committee meetings as a specific mechanism for coordination.

3.2 IMPLEMENTATION ARRANGEMENTS

253. FAO will be the GEF Agency responsible for supervision and provision of technical guidance during project implementation. In addition, FAO will act as financial and operational Executing Agency, and will be responsible for the financial and operational execution of the project in addition to being the GEF implementing agency. FAO will delivery procurement and contracting services to the project using FAO rules and procedures, as well as financial services to manage GEF resources.

3.2.1 Roles and responsibilities of the executing partners

254. The Ministry of Agriculture & Food, Forests and Fisheries (MAFFF) will be the lead executing partner within the Government. MAFFF will support and supervise the execution of the project. Specifically,

MAFFF will: (i) facilitate the establishment of the Project Steering Committee (PSC); (ii) facilitate the establishment of and supervise the project management unit (PMU) which will be hosted at MAFFF Extension office in Nuku'alofa; (iii) mobilize government co-financing; (iv) coordinate the multi-stakeholder dialogue platform(s); and (v) ensure optimal coordination and collaboration with other government departments involved in the project.

255. Within MAFFF, the Forestry Division will be responsible to co-ordinate with the PMU the implementation of Component 3, and the Livestock Division and the Agriculture Extension Division will play leading role in the implementation of Component 2.

256. In addition, the Ministry of Lands, Survey, and Natural Resources (MLSNR), will lead the implementation of Component 1.

257. Project Managements Unit (PMU): The PMU will be established and hosted by MAFFF Extension office. The PMU will be responsible for day-to-day project operations and will ensure the coordination and execution of the project through timely and efficient implementation of agreed work plans, in close consultation with PSC and FAO (BH, LTO, relevant technical Departments and TCI GEF Coordination Unit). The PMU will act as secretariat to the PSC. It will ensure timely delivery of inputs and outputs, closely monitor project progress, and facilitate collaboration with other on-going initiatives. The PMU will be responsible for the preparation and submission of project progress reports to DGC and FAO. The PMU will consist of a full time Project Manager (PM), a part-time Senior Technical - Adviser (STA), and an administrative & finance assistant, and four field project officers. The PMU will carry out its functions in line with FAO rules and regulations. The following are some of the key functions of the PMU:

- to technically identify, plan, design and support all activities;
- to liaise with government agencies and to regular advocate on behalf of the Project;
- to prepare the Annual Work Plan and Budget (AWP/B);
- to be responsible for day-to-day implementation of the project in line with the AWP;
- to ensure a results-based approach to project implementation, including maintaining a focus on project results and impact as defined by the RF indicators;
- to coordinate project interventions with other ongoing activities;
- to monitor project progress;
- to be responsible for the elaboration of FAO PPRs and the annual PIR, and;
- to facilitate and support the midterm review and final evaluation of the Project.

258. The PMU will also be supported by a series of national and international consultants to provide short term inputs to the Project. These will be finalized during the project implementation, and are tentatively identified as:

Table 12. International and National Consultants to assist Project Implementation.

Expert Title	Duration of service (months)
in months	
International Consultants	
Senior Technical Advisor	16
Policy and Legal Framework expert	3
Land Administration System Specialist	1.5
SOLA Software Development Specialist	3
Digital Cadastral Map Capture & QC Specialist	2
Community development and participation specialist	5
Forestry Strategic Development Plan	2
Forestry Monitoring System Specialist	2
National Consultants	
Project Manager (PM)	48
Administration and Finance Assistant	48
Land Information Management Specialist	3
Local Open Source Software Development	24
Spatial Data Entry Operators	36
Forestry and Agro-forestry Specialist	45
ILAMS Communications & KM Specialist	12
Field Project Officer (Tongatapu)	41
Field Project Officer (Vava'u)	45
Field Project Officer (Ha'apai)	45
Field Project Officer (Eua)	45

259. The detailed Terms of Reference for all short and long term personnel are provided in Annex 10.

260. **National Project Director (NPD):** The MAFFF will carry out its responsibilities to support Project execution through housing of the Project Management Unit within its Extension Division and the National Project Director (NPD). The NPD will be responsible for the overall project management on behalf of the Tongan Government. The NPD is a current Government staff and not to be financed by the Project. The duties of the NPD include (i) acting as the responsible focal point at the political and policy level within MAFFF, and (ii) ensuring all necessary support input from Government personnel are provided by MAFFF and MLNSR to enable the project to implement all of the proposed component activities; and (iii) reviewing and providing input to annual work plans and budgets in consultation/collaboration with the FAO representative; (iv) and to participate in the selection of recruitment of consultants. The Terms of Reference for the NPD can be found in Appendix 9.

261. **Project Manager (PM)** will lead the PMU and will be responsible for the implementation of the project, including the mobilization of all project inputs and supervision of consultants and subcontractors. The PM reports to the BH on operational issues and to the LTO on technical issues. He/she shall perform a liaison role with MAFFF, MLNSR, FAO and all other stakeholders involved in the project and will be fully accountable to the CEO and the PSC for the satisfactory execution of the project. The PM will report on Project progress to PSC meetings, and will develop and submit semi-annual PPRs and annual PIRs. In addition to technical and substantive duties, the PM will:

- Oversee creation of a participatory monitoring system for the Project's work;
- Ensure real-time monitoring of Project progress and the alerting of the NPD, BH and the LTO to potential problems that could result in delays in implementation;
- Help identify consultant candidates and work with the BH to ensure their timely recruitment;
- Ensure the Project's effective and efficient work with stakeholders in the pilot areas;
- Help organize and supervise consultant inputs;

- Oversee creation of the Project's approach to managing and sharing knowledge, and to identifying and disseminating lessons learned;
- Communicate, advocate and engage in policy dialogue

262. **Senior Technical Adviser (STA)** will directly support the PM and the PMU and ensure best international technical and management practices are integrated into the Project work plan and activities. The STA reports to the BH on operational issues and to the LTO on technical issues. The STA is a part-time position of approximately 4 months per year and will support all aspects of the day-to-day execution of the Project. He/she will also be responsible for providing technical advice and guidance in his/her area of technical expertise. The STA will support the PM in reporting on Project progress to PSC meetings, and will contribute to the development of semi-annual PPRs and annual PIRs. In addition the STA will:

- Ensure latest and best international practices and approaches are reflected in the design and planning of Project Activities;
- Design and propose a participatory monitoring system for the Project's work;
- Support the PM in the day-to-day monitoring of Project progress and the alerting of the BH and the LTO to potential problems that could result in delays in implementation;
- Help identify consultant candidates, especially international candidates;
- Support design of the Project's work with stakeholders in the pilot areas;
- Help organize and supervise consultant inputs;
- Propose an approach to managing and sharing knowledge, and to identifying and disseminating lessons learned;
- Provide on-the-job capacity development to all members of the PMU;
- Communicate, advocate and engage in policy dialogue.

263. **Administration and Finance Assistant (AFA)** will be responsible for day-to-day logistical and financial management support to the project, above and beyond the contractual and procurement support work provided by the Budget Holder. The AFA will work in close consultation with the PM, PTA, Budget Holder, LTO and project executing partners, and will take the operational responsibility for timely delivery of needed inputs to produce project outputs.

264. **Field Project Officer (FPO);** Four FPOs will be recruited and will be responsible for the coordination and planning of all project field level activities in the islands of Tongatapu, Vava'u, 'Eua, and Ha'apai. The FPOs will take the lead in communicating with local communities and villages, advising on the preparation of local work plans, designing and running co-ordinate trainings workshops, and the detail implementation of the field activities for Component 2 and 3. The FPOs will work under the MAFF Officer in Charge in the island groups and will report to the PM and respective OICs.

3.2.2 FAO's role and responsibilities, as the GEF Agency, including delineation of responsibilities internally within FAO

265. FAO will be the GEF Agency of the Project as well as the financial and operational executing agency. As the GEF implementing agency, FAO will be responsible for project oversight to ensure that GEF policies and criteria are adhered to and that the project meets its objectives and achieves expected outcomes and outputs as established in this Project Document in an efficient and effective manner. FAO will supervise and provide technical guidance for the overall implementation process. Administration of the GEF grants will be in compliance with the rules and procedures of FAO, and in accordance with the agreement between FAO and the GEF Trustee.

266. The specific responsibilities for FAO will include:

- Administer funds from GEF in accordance with the rules and procedures of FAO;
- Oversee project implementation in accordance with the project document, work plans, budgets, agreements with co-financiers and the rules and procedures of FAO;
- Provide technical guidance to ensure that appropriate technical quality is applied to all activities concerned;

- Carry out at least one supervision mission per year;
- Report to the GEF Secretariat and Evaluation Office, through the annual Project Implementation Review, on project progress and provide financial reports to the GEF Trustee.

267. FAO will also be the financial and operational executor of the GEF resources including financial management, procurement of goods and contracting of services following FAO rules and procedures. As the financial executor, FAO will provide six-monthly financial reports including a statement of project expenditures to the MAFFF/GoT, and Project Steering Committee (PSC). In accordance with the present project document, progress in the financial execution of the project, and the Annual Work Plan and Budget approved by the PSC, FAO will prepare budget revisions to maintain the budget current in the financial management system of FAO. The budget revisions will be provided to NPD, PMC, and the PSC to facilitate project planning and execution. FAO will, in collaboration with NPD and the PMC, participate in the planning and execution of contracting and procurement processes.

268. Budget Holder (BH): The FAO Sub-regional Coordinator for the Pacific Islands based in Samoa will be the Budget Holder (BH) of this project's GEF resources. The BH, working in close consultation with the Lead Technical Officer (LTO), will be responsible for the operational as well as administrative and financial management of the project. In this capacity, the BH will authorize the disbursement of GEF project funds. The BH specific tasks will include: (1) contracting and procurement processes based on the request from MAFFF/PMC and in accordance with the approved Annual Work Plan and Budget; (2) process the payments corresponding to delivery of goods, services and technical products based on the prior clearance of the same by MAFFF and PMC as applicable in each case; (3) provide six-monthly financial reports including a statement of project expenditures to MAFFF/PMC and the PSC; (4) at least one time per year or more frequent if required, prepare Budget Revisions for submission to TCI/GEF Coordination Unit for approval and (5) authorization for approval of procurement and letters of agreement in excess of the delegated authority will be requested as provided for by the Organization's relevant rules and procedures.

269. The FAO Lead Technical Officer (LTO): The SAP Plant Production and Protection Officer will be the LTO for the project and will be responsible for to provide technical guidance to the project team to ensure delivery of quality technical outputs in close consultation with the FAO Project Task Force (PTF) members. The LTO will coordinate the provision of appropriate technical backstopping from all the concerned FAO units represented in the Project Task Force responding to requests from the MAFFF and the Project Management Committee. The primary areas of LTO support to the project include;

- review and ensure clearance by the relevant FAO technical officers of all technical Terms of Reference (TOR) for consultants and the Letter of Agreement (LoA) for contracts to be performed under the project.
- review and clear final technical products delivered by consultants and contract holders financed by GEF resources before the final payment can be processed;
- in close collaborations with MAFFF, MLSNR and NPD lead the selection of project staff, consultants, and other institutions to be contracted or whom an LoA will be signed;
- assist with review and provision of technical comments to draft technical products/reports on request from the Project Steering Committee during project execution;
- review and approve project progress reports submitted by the PM, in coordination with the BH;
- provide technical support to the National Project Director and PM and provide technical inputs to procurement and contract documentation;
- review the Project Progress Reports (PPRs) and prepare the annual Project Implementation Review (PIR);
- undertake field annual (or as needed) supervision missions and monitor technical implementation as established in the project results framework;

- review and clear final technical products delivered by consultants and contract holders finance by GEF resources before final payment can be processed.
- review the TORs for the final evaluation; participate in the mission including the final workshop with all key project stakeholders, development and follow-up to recommendations on how to insure sustainability of project outputs and results after the end of the project.

270. FAO Project Task Force (FAO-PTF): A multi-disciplinary Project Task Force (PTF) will be established within FAO will be led by the Budget Holder and include the LTO, GEF Coordination Unit, and other technical units supporting the implementation of this project. The main responsibility of the PTF is to provide the technical guidance to the LTO and the PMU for successful project implementation and advice on key implementation issues arise.

271. Participating Units: The relevant participating units from across FAO will be involved to support project implementation to ensure that the project is successful in achieving intended outputs and objectives. When appropriate, these units within HQ and RAP and SAP Multi-Disciplinary Team (MDT) will provide technical support in areas such as integrated agro ecosystem management and sustainable agriculture, climate smart agriculture and adaptation, livestock waste management, livestock production and animal husbandry, biodiversity conservation, forestry and watershed management, and sustainable land management. When necessary and requested, the FAO Investment Centre Division (TCI) will provide adaptive management support and results-based management oversight and guidance to the LTO and the participating units.

272. The FAO-GEF Coordination Unit in TCI will review and approve project progress reports (PPRs), annual project implementation reviews (PIRs), financial reports, and budget revisions based on the AWP/B. This FAO GEF Coordination Unit specific task will;

- review and clear the annual PIR and undertake supervision missions if considered necessary. The PIRs will be included in the FAO GEF Annual Monitoring Review submitted to GEF.
- participate in the mid-term and final evaluations and the development of corrective actions in the project implementation strategy in the case needed to mitigate eventual risks affecting the timely and effective implementation of the project.
- in collaboration with the FAO Finance Division request transfer of project funds from the GEF Trustee based on six-monthly projections of funds needed.

273. The FAO Finance Division will provide final clearance of any budget revisions. It will also provide the annual Financial Reports to the GEF Trustee and, in collaboration with the FAO-GEF Coordination Unit, request project funds on a six-monthly basis to the GEF Trustee.

3.2.3 Project technical, coordination and steering committees

274. Project Steering Committee (PSC): The Project will establish a Project Steering Committee (PSC) to provide high level orientation and policy guidance for the project implementation. The primary role of the PSC will be to ensure that the GEF project is executed efficiently and effectively and its outcomes are mainstreamed into government policies, laws and regulations. The PSC will oversee and guide project implementation, review and approve annual progress reports and project work plans and take necessary actions to overcome constraints in project implementation.

275. The PSC will be chaired by the CEO of MAFFF and permanent members of the PSC will include representatives of the following government institutions: MLSNR, Director of Environment, CEO for Internal Affairs, and FAO as the GEF Agency. In addition to the permanent members, the PSC will invite co-financing partners and other stakeholders to participate in the PSC as observers. The Project Manager (PM) will act as Secretary to the PSC and the Senior Technical Adviser (STA) will support the PM in organising PSC meetings and in the preparation of related documentation and reporting.

276. The PSC will meet at least twice a year and its responsibilities will include: (i) overall oversight of project progress and achievement of planned results as per the project document; (ii) take decisions in

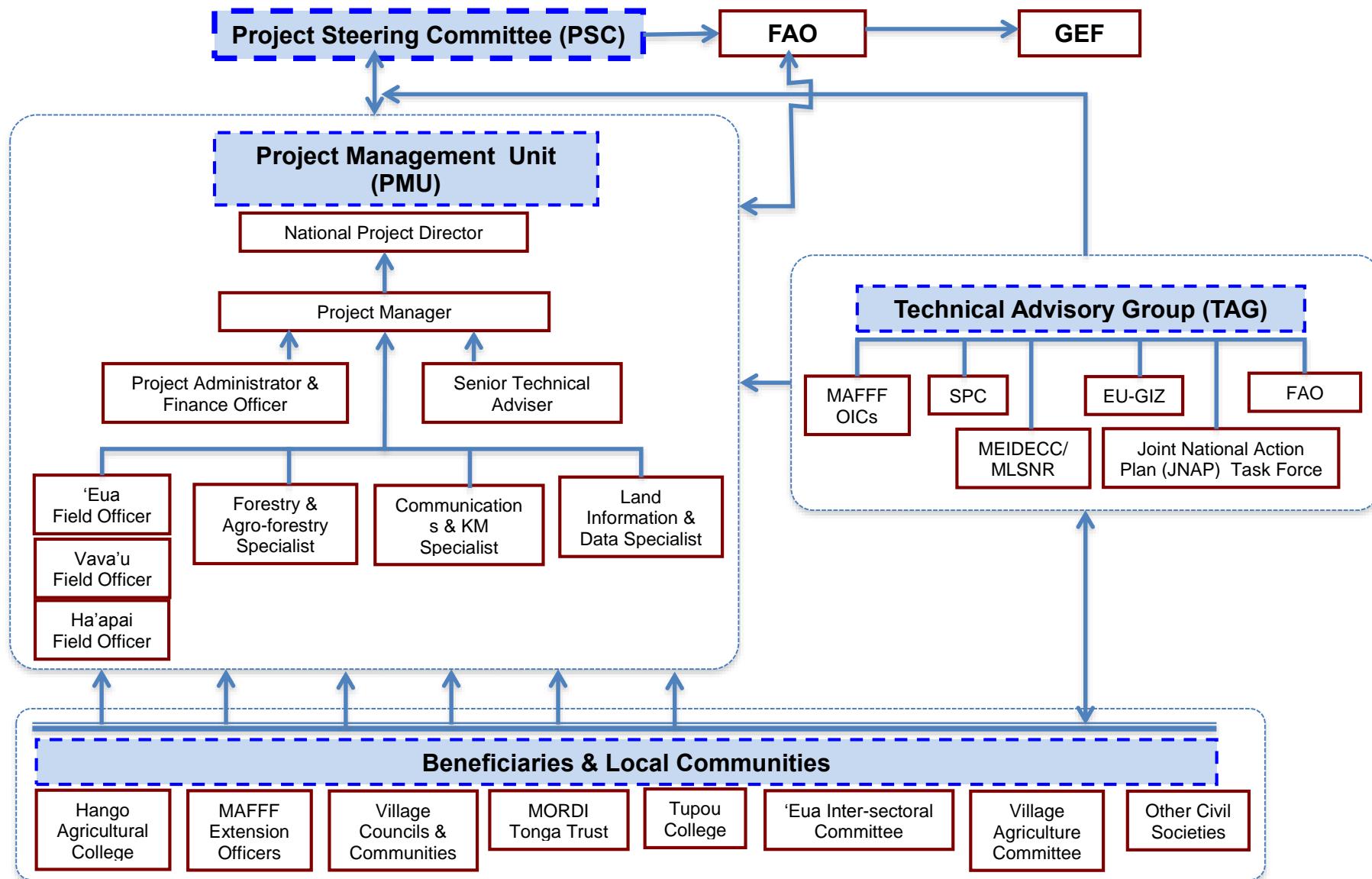
relation to the practical organization, coordination and implementation of the project; (iii) facilitate cooperation between project participating partners and project support at the local level; (iv) advise the MAFFF on other on-going and planned activities facilitating collaboration between the Project and other programmes, projects and initiatives; (v) facilitate that co-financing is provided in a timely and effective manner; and (vi) review and approve the six-monthly Project Progress Reports and the AWP/B.

277. **Technical Advisory Group (TAG)**; A TAG will be set up with the following key objectives of: (i) facilitating coordination among project partners; (ii) supporting the Project Management Committee with technical recommendations and guidance regarding project activities; and (iii) socializing and providing timely information on implementation of co-financed activities. The TAG will be comprised by representatives of the relevant Government ministries and project partners. The PM will act as secretary of the Group. The TAG will meet on a quarterly basis, as minimum.

3.2.4 Organizational chart

278. The institutional arrangements proposed for this project are shown in Figure 7 below. More details about the roles of the different partners involved in this project are summarized in the following sections and detailed draft Terms of Reference in Appendix 9.

Figure 7: Organizational & Implementation Structure



3.3 RISK MANAGEMENT

3.3.1 Significant risks facing the project

240. The principal risks facing the project area as follows (see also 3.APPENDIX 6); mitigation measures for each of the risks are set out in Section 3.3.3 below:

- 1) **Limited collaboration by 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.
- 2) **Limited human and financial capacities in national Government:** while the Government of Tonga (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.
- 3) **Unsuitability of technologies to local conditions:** While the biogas/piggery system is already being piloted in Tongatapu, the integration of the system with whole farming system at the community-level to be piloted under this project has not been tested as yet in Tongatapu or the outer islands.
- 4) **Climate change:** climate change will pose a risk to the achievement of the project's objective as it may result in the climatic coping limits of the proposed production systems being exceeded (due to increases in temperature, rainfall variability and storm damage); land loss and degradation due to sea level rise, saltwater intrusion and salt spray impacts may also exacerbate productive pressures, and associated degradation, on the remaining land.

3.3.2 Environmental and social risks

279. Following FAO's *Environmental and Social Management Guidelines*, the proposed project's risk is classified as Low. Based on the project objective, outcomes and outputs, no adverse environmental or social impacts are likely and it conforms to FAO's pre-approved list of projects excluded from a detailed environmental assessment. On the contrary, the project and the GEF resources invested are expected to have positive impacts on agriculture and forestry resources, creating global environmental benefits.

There will be no negative impacts due to production of biogas through waste management, rather it will prevent use of firewood from nearby forest, provide organic fertilizers and avoid pollution due to limitation in the use of chemical fertilizers. Similarly, control of free roaming pigs will prevent damage to agro biodiversity as well as to the forest plants. Similarly, collection of rainwater will help to control erosion and will provide water during droughts hence improving soil moisture content and increasing soil fertility. Attention will be focused on maintaining low levels of fuel consumption for the production of local livestock feeds.

3.3.3 Risk management strategy

238. Project risks have been identified and analyzed during the full project preparation and mitigation measures have been incorporated into the project design (see the Project Risk Log in Appendix 6). With the support from and under the supervision of FAO, the Project Management Committee (PMC) will be responsible for the day-to-day management of these risks and the effective implementation of mitigation measures. The project's M&E system will serve to monitor project outcomes and outputs indicators, project risks and mitigation measures. The PMC will also be responsible for monitoring the effectiveness of mitigation measures and adjusting mitigation strategies as needed, and identify and manage any eventual new risks not foreseen during project development, in dialogue with other project partners.

239. The six-monthly Project Progress Report (see section 4.3) is the main tool for project risk monitoring and management. The reports include a section on systematic follow-up of risks and mitigation actions identified in previous reporting periods. The PPRs also include a section for identification of eventual new risks or risks that still need attention, their rating and mitigation actions,

as well as the responsible for monitoring those actions and the expected timeline. FAO will monitor the project risk management closely and follow up if needed by providing support for the adjustment and implementation of risk mitigation strategies. Reporting on risk monitoring and rating will also be part of the annual Project Implementation Review (PIR) prepared by FAO and submitted to the GEF Secretariat (see section 4.3).

Specific mitigation measures proposed in response to the risks identified in section 3.3.1 above are as follows:

- 1) **Effective participation and consultation to ensure local community collaboration:** extensive community consultations are built into every aspect of the project. Project sites have been selected, in large part, on the basis of communities' expressions of interest and willingness to engage in project activities and the existence of relations of trust that have been built up through previous agency initiatives. Participation will further be ensured through the tangible socioeconomic benefits that will result from the project's actions in the short term, in the form of reductions in the damage to crops and lands caused by roaming pigs, and the provision of clean and accessible renewable energy in the form of biogas.
- 2) **Strengthening of Government capacities, and reduction of community reliance on external capacities:** 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. In addition, the project will seek to minimize communities' dependence on Government support by promoting their capacities for the participatory generation, adaptation and dissemination of SLM technologies, based wherever possible on traditional knowledge; and "low-tech" approaches to the production and supply of planting materials.
- 3) **Development of capacities and governance mechanisms for the management and adaptation of technologies by local communities:** the project will build on previous experiences with piggy systems in Tonga and community-based biogas systems in other countries, which have shown a high level of uptake and sustainability. On-going training in operating and maintenance of the entire system would be provided during project implementation. In addition, this training will focus on developing capacities among community members to troubleshoot technical, social or other problems that may arise in the future; while the community-based governance mechanisms to be supported by the project will facilitate the resolution of any stakeholder conflicts that may arise regarding, for example, roles and responsibilities for the maintenance of the systems, or the equity of the distribution of their benefits.
- 4) **Development of capacities for innovation and adaptation to climate change:** The project's approach will mitigate these risks by promoting capacities among extension agents and among community members to innovate and adapt the resource management systems they promote or apply, through the use of participatory, adaptive approaches to analysis, learning and technology generation such as farmer field schools. The project's support to negotiated approaches to addressing land use planning and land tenure issues will further enable communities to adapt to CC-related changes in biophysical and demographic conditions.

3.4. FINANCIAL MANAGEMENT

3.4.1 Financial plan (by component, outputs and co-financier)

280. The total project will be implemented over a period of 4 years and has a total value of USD 9,304,954, of which USD 2,344,954 is from GEF resources and USD 7,170,000 in co-financing. The details are summarised below.

Table 13. Summary of Project Financial Plan

Components and Outputs	Government of Tonga	SPC	MORDI	Oxfam	GIZ	FAO	Tupoa College	Hango College	Total CF	GEF	Total
Component 1: Improving the enabling environment for integrated land and agro-ecosystem management.	1,575,792	0	0	0	0	0	0	0	1,575,792	515,364	2,091,156
1.1.1: Policy intention papers to inform sectoral policy and planning processes	134,511	0	0	0	0	0	0	0	134,511	43,992	178,503
1.1.2: National Land Use Policy document	134,511	0	0	0	0	0	0	0	134,511	43,992	178,503
1.2.1: Enhanced National System of Land Administration, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure.	970,099	0	0	0	0	0	0	0	970,099	317,271	1,287,368
1.3.1: National Strategic Forestry Development Plan developed	170,213	0	0	0	0	0	0	0	170,213	55,668	225,880
1.3.2: National Forest Monitoring system	166,458	0	0	0	0	0	0	0	166,458	54,440	220,897
Component 2: Site-based capacities for evidence-based negotiation of land use planning, management and tenure rights	144,384	138,132	180,493	44,202	27,626	257,848	28,547	28,547	849,779	277,921	1,127,700
2.1.1: Multi-stakeholder mechanisms for the negotiation of resource management and tenure	44,137	42,226	55,175	13,512	8,445	78,822	8,727	8,727	259,771	84,958	344,728
2.1.2: Negotiated and evidence-based plans for land use and integrated agroecosystem management at landscape and village levels	42,059	40,238	52,577	12,876	8,048	75,110	8,316	8,315	247,539	80,958	328,497
2.1.3: 'Eua Watershed Area Management Plan developed, and implemented	58,188	55,668	72,741	17,814	11,133	103,916	11,504	11,505	342,469	112,004	454,471
3: Strengthening of capacities for the formulation and implementation of sustainable land management practices with an integrated R2R approach	639,556	611,868	799,507	195,798	122,374	1,142,151	126,453	126,453	3,764,160	1,231,072	4,995,232
3.1.1: Training modules for extension agents	42,371	40,537	52,968	12,972	8,107	75,669	8,378	8,378	249,380	81,560	330,940
3.1.2: Manuals for use by extension agents	18,994	18,171	23,744	5,815	3,634	33,919	3,755	3,755	111,787	36,560	148,347
3.2.1: Demonstration modules for integrated agroecosystem management systems	236,991	226,733	296,262	72,555	45,347	423,229	46,858	46,858	1,394,833	456,180	1,851,009
3.2.2: Farmer field schools for participatory problem analysis and development of SLM practices	52,310	50,045	65,393	16,015	10,009	93,418	10,343	10,343	307,876	100,691	408,567
3.2.3: Extension modules applied in target communities	53,343	51,034	66,684	16,331	10,207	95,264	10,547	10,547	313,957	102,680	416,637
3.3.1: Operational plans for forest restoration, including mangroves, formulated and implemented	34,641	33,141	43,305	10,605	6,628	61,864	6,849	6,849	203,882	66,680	270,563

Components and Outputs	Government of Tonga	SPC	MORDI	Oxfam	GIZ	FAO	Tupoia College	Hango College	Total CF	GEF	Total
3.3.2: Systematisation of traditional tree management systems	34,641	33,141	43,305	10,605	6,628	61,864	6,849	6,849	203,882	66,680	270,563
3.3.3: Sustainable Forestry Management Agreements	36,720	35,129	45,902	11,241	7,026	65,575	7,260	7,260	216,113	70,680	286,793
3.3.4: Improved mechanisms for supply of tree seed and planting materials	92,826	88,808	116,042	28,418	17,762	165,774	18,354	18,354	546,338	178,680	725,017
3.3.5: Training modules on forest restoration and management, for Forestry Division staff and community members	36,719	35,129	45,902	11,241	7,026	65,575	7,260	7,260	216,112	70,680	286,793
Component 4. Knowledge Generation and Dissemination and Monitoring and Evaluation	638,840	0	0	0	0	0	0	0	638,840	208,933	847,773
4.1.1 Knowledge generated by the project shared within Tonga and the region	425,893	0	0	0	0	0	0	0	425,893	154,466	580,359
4.1.2 Monitoring and Evaluation of project activities conducted and used for adaptive project management purposes	212,947	0	0	0	0	0	0	0	212,947	54,466	267,413
Project Management	341,429	0	0	0	0	0	0	0	341,429	111,664	453,093
Totals	3,340,000	750,000	980,000	240,000	150,000	1,400,000	155,000	155,000	7,170,000	2,344,954	9,514,954

GEF inputs:

281. The requested GEF grant resources totalling USD 2,344,954 will be allocated mainly in support of capacity development, policy and legal studies and preparation of normative instruments, technical assistance for technical studies, preparation of policies and plans, and finding technical and social solutions for sustainable land and forest management and biogas production linked with livestock feed and community livelihoods. GEF resources will also be used for financing publications for awareness-raising and education on waste management, forest conservation and livestock feed management and will support community based livelihood enhancement activities. Activities that will be supported by the GEF funding can be broadly described capacity building and will build capacity that does not exist at present and cannot be developed with the skills and resources currently available in the country.

Government inputs:

282. The Tonga Government co-financing amounts to USD 3,340,000 and contributes almost 50% of the total co-financing for the project. This co-financing includes the contributions from the key Government Ministries including MAFFF, MLNSR, MEDECC and MIA outlined in Section 1.3. The government in-kind co-financing will cover the;

- a. the salary of a part-time National Project Director;
- b. the cost of staff time for Government officers and technicians, working with the project funded consultants and other staff directly engaged in project implementation activities;
- c. the provision of appropriate office spaces, related office operational costs, office time and utilities, and support for local transportation costs; and
- d. contributions from other relevant development projects and activities that each Ministry implements.

283. Apart from the financial contributions from the Government, the long term success of the project will ultimately depend on the commitment of the Government to translate project outputs into outcomes, by mobilizing local support for the project's objectives and working in partnership across departments and with others outside government. Participants in project preparation activities and consultations have indicated their willingness to do this and support the policy, legislation and institutional arrangements anticipated due to the implementation of the proposed project.

FAO inputs:

284. FAO will provide technical assistance, support, training and supervision of the execution of activities financed by GEF resources. FAO will draw on its wide range of in-house expertise in sustainable agriculture, livestock, forestry, land management, forest conservation and community-based approaches to resource management, to support the proposed project. The project will benefit from FAO's past experiences working with Tonga on agriculture development, crop production, livestock management, forestry policy and management, fisheries management, and integrated pest management projects.

285. The total FAO contribution to the project will amount to USD 1,400,000 which will be almost 20% of the total co-financing. The contribution from FAO to the project will include FAO regular programme as well as project and other extra budgetary related resources comprising staff time (in-kind), travel (cash) and other operating expenses devoted together with technical advice to the project (USD300,000).

286. In particular, FAO support will be provided to the project through TCP projects and regular programme grants amounting to USD1,100,000. These include Country Programme Framework (2013-2017) projects for Tonga to be implemented by 2017, as follows:

1. TCP facility to strengthen capacity for forest inventory (USD150,000)
2. New TCP project: Tonga Sustainable Livestock Utilisation, Development and Conservation (USD300,000)
3. New TCP project: Value chains analysis and farmers trained in Good Agricultural Practices (USD300,000)
4. New Regional TCP: Regional feasibility for locally produced livestock feed (USD100,000)
5. Ongoing GCP/INT/153 EC – Capacity Building Related to Multilateral Environmental Agreements (MEA) in ACP Countries – Phase 2 (USD30,000)

6. Plant Genetic Resources and Seeds and Pacific crop calendar (USD10,000)
7. Review and update bio-security legislation in collaboration with the PPPO (USD10,000).

287. The remaining USD 200,000 fund for co-financing will be provided under the next cycle of the country programming framework (2017-2022), prior to the expected end date of this project.

288. The project will also benefit from FAOs past experience of working with countries in the Pacific on SOLA, livestock improvement and national forest programmes, forest conservation, forest assessment, forest financing and small-scale enterprise development. In addition to the technical support from FAO Head Quarters in Rome and the Regional Office at Bangkok, FAO will provide local technical support to the project from its network on bioenergy, natural resource management and gender mainstreaming experts in the Pacific region and its technical staff in the FAO Sub-regional office for the Pacific.

Other co-financier inputs:

289. The other co-financiers to the project will come from key executing partners which will include the Secretariat of Pacific Communities (SPC) Land Resource Division, MORDI Tonga Trust, Oxfam New Zealand, Asian Development Bank (ADB), Tupou College, Hango College, and project beneficiaries. The activities of each co-financing partner are detailed in Section 1.3.

290. The GIZ in-kind contribution will amount to approximately USD150,000 over the four years duration of the FAO project. It will include technical advisory services to ILAMS, building on GIZ experiences and tapping into good practices and lessons learned from the GIZ Programme - Coping with Climate Change in the Pacific Island Region as well as other on-going GIZ programmes in Tonga. In particular, GIZ's in-kind co-financing will contribute to the delivery of Output 2.1.3: "Eua Watershed Area Management Plan developed and implemented".

291. The in kind contribution of project beneficiaries' time spent for project related activities has been estimated and valued at approximate local rural work force rates. However, it is the ownership of project by the beneficiaries that will actually result in sustainability of project outcomes and pay long term environmental and livelihood benefits to the community in particular and all the stakeholders in general.

3.4.2 Financial management and reporting

292. Financial management and reporting in relation to the GEF resources will be carried out in accordance with FAO's rules and procedures, and in accordance with the agreement between FAO and the GEF Trustee. On the basis of the activities foreseen in the budget and the project, FAO will undertake all operations for disbursements, procurement and contracting for the total amount of GEF resources, as per the request of the NPD.

293. **Financial Records.** FAO shall maintain a separate account in United States dollars for the Project's GEF resources showing all income and expenditures. Expenditures incurred in a currency other than United States dollars shall be converted into United States dollars at the United Nations operational rate of exchange on the date of the transaction. FAO shall administer the Project in accordance with its regulations, rules and directives.

294. **Financial Reports.** The BH shall prepare six-monthly project expenditure accounts and final accounts for the project, showing amount budgeted for the year, amount expended since the beginning of the year, and separately, the un-liquidated obligations as follows:

1. Details of project expenditures on a component-by-component and output-by-output basis, reported in line with project budget codes as set out in the Project document, as at 30 June and 31 December each year.
2. Final accounts on completion of the Project on a component-by-component and output-by-output basis, reported in line with project budget codes as set out in the Project document.
3. A final statement of account in line with FAO Oracle Project budget codes, reflecting actual final expenditures under the Project, when all obligations have been liquidated.

295. **Financial Statements.** Within 30 working days of the end of each semester, i.e. on or before 31 July and 31 January, the FAO Representation in SAP shall submit six-monthly statements of expenditure of

GEF resources to the Project Management Committee and Project Steering Committee, which will be included in the PPRs. The purpose of the financial statement is to list the expenditures incurred on the project on a six monthly basis compared to the budget, so as to monitor project progress and to reconcile outstanding advances during the six-month period. The financial statement shall contain information that will serve as the basis for a periodic revision of the budget.

296. The BH will submit the above financial reports for review and monitoring by the LTO and the FAO GEF Coordination Unit. Financial reports for submission to the donor (GEF) will be prepared in accordance with the provisions in the GEF Financial Procedures Agreement and submitted by the FAO Finance Division.

297. **Budget revisions.** Semi-annual budget revisions will be prepared by the BH in accordance with FAO standard guidelines and procedures.

298. **Responsibility for cost overruns.** The BH shall utilize the GEF project funds in strict compliance with the project document. The BH shall be authorized to make variations not exceeding 20 per cent on any total output budget line or any cost category line of the project budget provided that the total allocated for the specific budgeted project component is not exceeded and the reallocation of funds does not impact the achievement of any project output as per the project Results Framework (Appendix 1). Any variations exceeding 20 per cent on any total output budget line or any cost category line, which may be necessary for the proper and successful implementation of the project, shall be subject to prior consultations with the LTO and the FAO-GEF Coordination Unit. In such a case, a revision to the FAO-GEF budget in FPMIS should be prepared by the BH and approved by the LTO and the FAO-GEF Coordination Unit. Cost overruns shall be the sole responsibility of the BH.

299. **Audit.** The Project shall be subject to the internal and external auditing procedures provided for FAO financial regulations, rules and directives and in keeping with the Financial Procedures Agreement between the GEF Trustee and FAO. The audit regime at FAO consists of an external audit provided by the Auditor-General (or persons exercising an equivalent function) of a member nation appointed by the Governing Bodies of the Organization and reporting directly to them, and an internal audit function headed by the FAO Inspector-General who reports directly to the Director-General. This function operates as an integral part of the Organization under policies established by senior management, and furthermore has a reporting line to the governing bodies. Both functions are required under the Basic Texts of FAO which establish a framework for the terms of reference of each. Internal audits of imprest accounts, records, bank reconciliation and asset verification take place at FAO field and liaison offices on a cyclical basis.

3.4.3 Procurement

300. As per the request of the MAFFF and managed by the PM, FAO will procure the equipment and services foreseen in the budget (Appendix 5) and the AWP/B, in accordance with FAO rules and procedures.

301. Careful procurement planning is necessary for securing goods, services and works in a timely manner, on a “Best Value for Money” basis, and in accordance with the Rules and Regulations of FAO. It requires analysis of needs and constraints, including forecast of the reasonable timeframe required to execute the procurement process. Procurement and delivery of inputs in technical cooperation projects follow FAO’s rules and regulations for the procurement of supplies, equipment and services (i.e. Manual Sections 502 and 507). *Manual Section 502: “Procurement of Goods, Works and Services”* establishes the principles and procedures that apply to procurement of all goods, works and services on behalf of the Organization, in all offices and in all locations, with the exception of the procurement actions described in Appendix A – Procurement Not Governed by Manual Section 502. *Manual Section 507* establishes the principles and rules that govern the use of Letters of Agreement (LoA) by FAO for the timely acquisition of services from eligible entities in a transparent and impartial manner, taking into consideration economy and efficiency to achieve an optimum combination of expected whole life costs and benefits (“Best Value for Money”).

302. As per the guidance in FAO's Project Cycle Guide, the BH will draw up an annual procurement plan for major items which will be the basis of requests for procurement actions during implementation. The plan will include a description of the goods, works, or services to be procured, estimated budget and source of funding, schedule of procurement activities and proposed method of procurement. In situations where exact information is not yet available, the procurement plan should at least contain reasonable projections that will be corrected as information becomes available.

303. Before commencing procurement, the PTC will update the project's Procurement Plan (Appendix 5) for approval by the Project Management Committee. This plan will be reviewed during the inception workshop and will be approved by the FAO Representative in SAP. The PTC will update the Plan every six months, request the approval of the NPD and submit the plan to the FAO Representative in SAP for approval.

SECTION 4 – MONITORING, REPORTING AND EVALUATION

304. Monitoring and evaluation of progress in achieving project results and objectives will be done based on the targets and indicators established in the Project Results Framework (Appendix 3 and described in section 1.4). Monitoring and evaluation activities will follow FAO and GEF monitoring and evaluation policies and guidelines. The monitoring and evaluation system will also facilitate learning and replication of project results and lessons in relation to integrated management of natural resources.

4.1 Oversight and monitoring responsibilities

305. The monitoring and evaluation roles and responsibilities specifically described in the Monitoring and Evaluation Plan (see below) will be undertaken through: (i) day-to-day monitoring and project progress supervision missions (Project Monitoring and Evaluation specialist (PMES) and PM); (ii) technical monitoring of indicators to measure the introduction of technologies for integrated natural resources management and project areas and the surface covered by conservation agreements and management plans (NPD in coordination with local organizations and other project stakeholders; (iii) specific monitoring plans for implementation of good practices (component 2); (iv) mid-term and final evaluations (independent consultants and FAO Evaluation Office); and (v) monitoring and supervision missions (FAO).

306. At the initiation of project implementation, the PMES will set up a project progress monitoring system. Participatory mechanisms and methodologies for systematic data collection and recording will be developed to support outcome and output indicator monitoring and evaluation. During the inception workshop (see section 4.3 below), M&E related tasks to be addressed will include: (i) presentation and clarification (if needed) of the Project Results Framework with all project stakeholders; (ii) review of the M&E indicators and their baseline; (iii) drafting the required clauses to include in consultants' contracts to ensure they complete their M&E reporting functions (if relevant); and (iv) clarification of the respective M&E tasks among the Project different stakeholders. One of the main outputs of the workshop will be a detailed monitoring plan agreed to by all stakeholders based on the monitoring and evaluation plan summary presented in section 4.4 below.

307. The day-to-day monitoring of the Project implementation will be the responsibility of the NPD and the PTC and will be driven by the preparation and implementation of an AWP/B followed up through six-monthly PPRs. The preparation of the AWP/B and six-monthly PPRs will represent the product of a unified planning process between main project stakeholders. As tools for results-based-management (RBM), the AWP/B will identify the actions proposed for the coming project year and provide the necessary details on output targets to be achieved, and the PPRs will report on the monitoring of the implementation of actions and the achievement of output targets. Specific inputs to the AWP/B and the PPRs will be prepared based on participatory planning and progress review with all stakeholders and coordinated through the NPD and facilitated through project planning and progress review workshops. These contributions will be consolidated by the PTC in the AWP/B draft and the PPRs.

308. An annual project progress review and planning meeting should be held with the participation of the Project Management Committee to finalize the AWP/B and the PPRs. Once finalized, the AWP/B and the PPRs will be submitted to the Project Steering Committee for approval (AWP/B) and revision (PPR) and to FAO for approval. The AWP/B will be developed in a manner consistent with the Project Results Framework to ensure adequate fulfillment and monitoring of project outputs and outcomes.

309. Following the approval of the Project, the PY1 AWP/B will be adjusted (either reduced or expanded in time) to synchronize it with the annual reporting calendar. In subsequent years, the AWP/Bs will follow an annual preparation and reporting cycle as specified in section 4.3 below.

4.2 Indicators and information sources

310. To monitor project outputs and outcomes including contributions to global environmental benefits, specific indicators have been established in the Project Results Framework (see Appendix 3). The Project Results Framework indicators and means of verification will be applied to monitor both project performance and impact. Following FAO monitoring procedures and progress reporting formats, data

collected will be sufficiently detailed that can track specific outputs and outcomes, and flag project risks early on. Output target indicators will be monitored on a six-monthly basis, and outcome target indicators will be monitored on an annual basis, if possible, or as part of the mid-term and final evaluations.

311. The project output and outcome indicators have been designed to monitor biophysical and socio-economic impacts and progress in building and consolidating capacities for conservation and sustainable use of biodiversity, integrated management of natural resources and sustainable forest management, at both at the political-legal level as well as at the productive level, among small farmer communities that conserve and use the natural resources for their food security, maintenance of ecosystems and cultures, and generation of economic benefits indicators will monitor:

312. The main information sources to support the M&E plan include: i) Government and other project partners' monitoring systems; ii) participatory workshops with stakeholders and beneficiaries to review project progress; iii) on-the-ground monitoring of good practices, sustainable forest management, and agro-ecosystem management; iv) progress reports prepared by the PTC with inputs from the partners, project specialists and other stakeholders; v) consultants' reports; vi) training reports; viii) mid-term review and final evaluation; viii) financial reports and budget revisions; ix) Project Implementation Reviews prepared by the FAO LTO supported by the FAO Representation in SAP; and x) FAO supervision mission reports.

4.3 Reporting schedule

313. Specific reports that will be prepared under the monitoring and evaluation program are: (i) Project inception report; (ii) Annual Work Plan and Budget (AWP/B); (iii) Project Progress Reports (PPRs); (iv) Annual Project Implementation Review (PIR); (v) Technical reports; (vi) Co-financing reports; and (vii) Terminal Report. In addition, assessment of the GEF BD, SFM and LD Tracking Tools (TTs) against the baseline (completed during project preparation) will be required at mid-term and final project evaluation.

314. ***Project Inception Report.*** After FAO approval of the project an inception workshop will be held. Immediately after the workshop, the PM will prepare a project inception report in consultation with the LTO and other project partners. The report will include a narrative on the institutional roles and responsibilities and coordinating action of project partners, progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. It will also include a detailed first year AWP/B, a detailed project monitoring plan based on the monitoring and evaluation plan summary presented in section 4.4 below. The draft inception report will be circulated to FAO, the Project Steering Committee for review and comments before its finalization, no later than three months after project start-up. The report will be cleared by the FAO BH, LTO and the FAO GEF Coordination Unit, and uploaded in FPMIS.

315. ***Annual Work Plan and Budget (AWP/B).*** The PM, under the supervision of the NPD, will submit to the Project Steering Committee a draft AWP/B no later than 10 January of each year. The AWP/B should include detailed activities to be implemented by project outputs and divided into monthly timeframes and targets and milestone dates for output indicators to be achieved during the year. A detailed project budget for the activities to be implemented during the year should also be included together with all monitoring and supervision activities required during the year. The FAO LTO will circulate the draft AWP/B to the FAO interdisciplinary Project Task Force and will consolidate and submit the FAO comments to the PTC, who will incorporate the comments of the Management Committee. The final AWP/B will be sent to the Project Steering Committee for approval and to the FAO for final no-objection and upload in FPMIS by the FAO LTO.

316. ***Project Progress Reports (PPR).*** The PM, under the supervision of the NPD, PMU will prepare six-monthly PPRs and submit them to the Project Steering Committee for their approval before submission to FAO Representation in SAP no later than July 31 (covering the period January through June) and 31 January (covering the period July through December). The first semester six months report should be accompanied by the updated AWP/B, if needed, for review and no-objection by FAO. The PPR are used to identify constraints, problems or bottlenecks that impede timely implementation and take appropriate remedial action. PPRs will be prepared based on the systematic monitoring of output and outcome indicators

identified in the project's Results Framework (Appendix 1). Each semester, the FAO PTM will review the PPR, collect and consolidate eventual comments by the FAO (BH, LTO, FAO-GEF Coordination Unit) and provide these comments to the PTC. When comments have been duly incorporated the BH and the LTO will give final approval and submit the final PPR to the FAO-GEF Coordination Unit for final clearance and upload in FPMIS.

317. **Annual Project Implementation Review (PIR).** The LTO supported by the FAO GO and with inputs from the PTC, will prepare an annual Project Implementation Review covering the period July (the previous year) through June (current year) to be submitted to the BH and the FAO-GEF Coordination Unit for review and approval no later than 31 July. The FAO-GEF Coordination Unit will upload the final report on FPMIS and submit it to the GEF Secretariat and Evaluation Office as part of the Annual Monitoring Review report of the FAO-GEF portfolio. The FAO-GEF Coordination Unit will provide the updated format when the first PIR is due.

318. **Technical Reports.** Technical reports will be prepared as part of project outputs and to document and share project outcomes and lessons learned. The drafts of any technical reports must be submitted by the PM to the PSC and the LTO for review and clearance and to the FAO-GEF Coordination Unit for information and eventual comments, prior to finalization and publication. Copies of the technical reports will be distributed to the Project Steering Committee and other project partners as appropriate. The final reports will be posted on the FAO FPMIS by the FAO PTM.

319. **Co-financing Reports.** The PM will be responsible for collecting the required information and reporting on in-kind and cash co-financing provided by all the project cofinanciers and eventual other new partners not foreseen in the Project Document. Every year, the PM will submit the report to the FAO Representation in Ecuador before 31 July covering the period July (the previous year) through June (current year).

320. **GEF Tracking Tools.** Following the GEF policies and procedures, the tracking tools for the BD, SFM/REDD+ and LD focal areas will be submitted to the GEF Secretariat at three moments: (i) with the project document at CEO endorsement; (ii) at the project's mid-term evaluation; and (iii) with the project's terminal evaluation.

321. **Terminal Report.** Within two months before the end date of the project, the PM will submit to the NPD and the LTO a draft Terminal Report. The main purpose of the final report is to give guidance to authorities (ministerial or senior government level) on the policy decisions required for the follow-up of the Project, and to provide the donor with information on how the funds were utilized. The terminal report is accordingly a concise account of the main **products, results, conclusions and recommendations** of the Project, without unnecessary background, narrative or technical details. The target readership consists of persons who are not necessarily technical specialists but who need to understand the policy implications of technical findings and needs for ensuring sustainability of project results. Work is assessed, lessons learned are summarized, and recommendations are expressed in terms of their application to the integrated landscape management in Tonga in the context of the development priorities at national and local levels, as well as in practical execution terms. This report will specifically include the findings of the final evaluation as described in section 4.6 below. A final project review meeting should be held to discuss the draft terminal report with the Project Steering Committee before it is finalized and approved by the BH, LTO and the FAO-GEF Coordination Unit.

4.4 Monitoring and evaluation plan summary

322. The below provides a summary of the main monitoring and evaluation reports, responsible parties and timeframe:

Table 14. Summary of the Main Monitoring and Evaluation Activities.

Type of Activity	Responsible Parties	Time-frame	Budget
Inception Workshop	NPD, PM, FAO (BH and LTO, and GEF Coordination Unit)	Within two months of project start up	USD 2,000 and FAO cost covered by agency fee
Project Inception Report	NPD and PM, cleared by LTO, BH, and the FAO GEF Coordination Unit	Immediately after the workshop	Project staff covered by co-financing and FAO cost covered by fees
Field-based impact monitoring	PM, institutions and pilot villages communities, and farmers participating in the project	Continually	USD10,800 (9% of project coordination time, technical workshops for identification of indicators, M&E workshops)
Supervision visits and rating of progress in PPRs and PIRs	PM, LTO and other technical units supporting the project, TCI/GEF Coordination Unit	Annual or as required	FAO visits will be financed through GEF agency fee. Project coordination visits will be financed by the project travel budget
Project Progress Reports (PPR)	PM with inputs from; FAO LTO and BH; BH to submit PPR to GEF Coordination Unit for clearance and uploading on FPMIS	Six-monthly	Included in salary of project manager; inputs from FAO will be covered by fee
Project Implementation Review (PIR) report	FAO LTO and PM supported by the NPD and PSC. PIRs cleared and submitted by the FAO GEF Coordination Unit to the GEF Secretariat	Six-monthly	Covered by project staff time& agency fee
Co-financing Reports	PMO, LTO, and BH	Annual (with PIR)	Covered by project staff time & agency fee
Technical reports	PM, LTO, BH	As appropriate	Included in cost of consultants and budget for information supplies, co-financing, etc.
Mid-term Evaluation	FAO Office for Evaluation to recruit external consultants; evaluation conducted with inputs from the project stakeholders and the project team including the FAO GEF Coordination Unit, the LTO, BH	At mid-point of project implementation	USD 50,000 for two independent consultants and associated costs. In addition the agency fee will pay for expenditures of FAO staff time and travel
Final evaluation	FAO Office for Evaluation to recruit external consultants; evaluation conducted with inputs from the project stakeholders and the project team including the FAO GEF Coordination Unit, the LTO, BH	At the end of project implementation	USD 50,000 for two independent consultants and associated costs. In addition the agency fee will pay for expenditures of FAO staff time and travel
Terminal Report	PMO, BH, LTO, TCSR	At least two months before the ending date of the project	Included in salary of project manager; inputs from FAO will be covered by fee
Total Budget			USD112,800

4.5 PROVISION FOR EVALUATIONS

323. An independent Mid-Term Evaluation (MTE) will be undertaken at the end of the first 24 months of project implementation to review progress and effectiveness of implementation in terms of achieving project objective, outcomes and outputs. Findings and recommendations of this review will be instrumental for bringing improvement in the overall project design and execution strategy for the remaining period of the project's term if necessary. FAO (the Office of Evaluation) will arrange for the MTE in consultation with project management. The evaluation will, *inter alia*:

- a) Review the effectiveness, efficiency and timeliness of project implementation;
- b) Analyse effectiveness of partnership arrangements;
- c) Identify issues requiring decisions and remedial actions;
- d) Propose any mid-course corrections and/or adjustments to the implementation strategy as necessary; and
- e) Describe the technical achievements and lessons learned derived from project design, implementation and management.

324. An independent Final Evaluation (FE) will be carried out three months prior to the terminal review meeting. The FE will aim to identify the project impacts, sustainability of project results and the degree of achievement of long-term results. The FE will also have the purpose of indicating future actions needed to expand on the existing Project in subsequent phases, mainstream and up-scale its products and practices, and disseminate information to management authorities and institutions with responsibilities in food security, conservation and sustainable use of natural resources, small farmer agricultural production and ecosystem conservation to assure continuity of the processes initiated by the Project. Critical elements that both the MTE and FE will pay special attention to are the outcome indicators.

4.6 COMMUNICATION

325. Communication and visibility are of crucial importance to the success of this project, because the project strategy will be to mobilize public, and community support to adoption of sustainable integrated ecosystem approach for sustainable economic and livelihood development. Giving high visibility to the project and ensuring effective communications in support of the Project's message it to be addressed through a number of activities that have been incorporated into the Project design. These include: (i) the recruitment of a Communications & knowledge management specialist to assist the PMU staff member responsible (*inter alia*) for communications and knowledge management; (ii) the preparation of documents and communication tools that capture the Project's economic, ecological and social benefits; (iii) the official launching of project need high level commitment from Government, (iv) community training to raise awareness and lobby for active participation, and; (iv) several awareness raising activities and media programs

326. A full communication plan and strategy will be drawn during project inception by the Communications & knowledge management expert. This communication will take place at three levels:

- In the local communes by Government and Communities and NGOs
- In the regions and within the platforms to be boosted in the context of the project by the PMU with the support of partner organisations;
- At national and international level in order to obtain financial and political support by the PMU, MAFFF, MLNSR, FAO, MORDI, SPC and other members of the PSC

327. The project budget includes the resources for a short-term communications specialist and the development of communication plan, and provision for project awareness program and activities. These inputs and activities will be integrated into the Project Work plan, and, as such, will come out of the Project's technical activities rather than be stand-alone activities.

APPENDIX 1. REVISED LETTER OF ENDORSEMENT



MINISTRY OF LANDS, ENVIRONMENT, CLIMATE CHANGE AND NATURAL RESOURCES

GOVERNMENT OF TONGA

P.O. Box 5, Nuku'alofa, Tonga

General Office: + (676) 23 611 Fax: + (676) 23 246 CEO Direct: + (676) 23 210 E-mail: apalaki@gmail.com

7 January 2014

To: Barbara Cooney
GEF Coordinator, FAO
Food and Agriculture Organization of the United Nations, Rome, Italy

Subject: Endorsement for Project "Tonga – R2R Integrated Land and Agro-ecosystem Management Systems"

In my capacity as GEF Operational Focal Point for the Government of Tonga, I confirm that the above Project proposal (a) is 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 with the support of the GEF Agency listed below. If approved, the proposals will be prepared and implemented by the Ministry of Lands, Environment, Climate Change and Natural Resources (MLENCCNR) and the Ministry of Agriculture & Food, Forests and Fisheries (MAFFF). I request the GEF Agency to provide a copy of the project document before it is submitted to the GEF Secretariat for CEO endorsement.

The total financing being requested for this Program is US\$2,665,000 inclusive of GEF project grant, project preparation grant (PPG), and Agency fee. The fund requested for Tonga is detailed in the table below and will be financing projects under the Program, with indication of the GEF Agency that will implement the project.

GEF Agency	Type of Trust Fund	Focal Area	Project	PPG	Agency Fee	Total
FAO	GEFTF	Biodiversity	155,715	19,000	15,725	190,440
FAO	GEFTF	Land Degradation	1,604,147	56,000	149,413	1,809,560
FAO	GEFTF	MFA (SFM)	585,092	25,000	54,908	665,000
Total Grant Resources			2,344,954	100,000	220,046	2,665,000

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

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

Sincerely



Mr 'Asipeli Palaki
CEO
Ministry of Lands, Environment, Climate Change
and Natural Resources
GEF Operation Focal Point,

APPENDIX 2. RISK CLASSIFICATION CERTIFICATION FORM

After completing the Environmental and Social (E&S) Screening Checklist, the Lead Technical Officer (LTO) completes and certifies this Certification Form and attached the E&S Screening Checklist to this form.

Project symbol: GCP/TON/001/GFF

Project title: Integrated Land and Agro-ecosystem Management Systems (ILAMS) for Tonga

A. RISK CLASSIFICATION



Low



Moderate



High

1. Record key risk impacts from the E&S Screening Checklist

A. Drought and access to water

C. Pest and diseases outbreak

B. _____

D. _____

2. Has the project site and surrounding area been visited by the compiler of this form?



Yes



No

B. STAKEHOLDER CONSULTATION/ENGAGEMENT

Identification of Stakeholder(s)	Date	Participants	Location
Ministry of Agriculture and Food, Forests and Fisheries (MAFFF); Ministry of Lands, Survey and Natural Resources (MLNSR); Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication (MEIDMECCC).	07/10/ 2014	All	Tongatapu
Project Inception workshop - Key Government Ministries (MAFFF, MLNSR, MEIDMECCC, MIA), Civil Society, community representatives, and supporting partners UNDP, IFAD, SPC and FAO	08/10/ 2014	30	Tongatapu
Consultation meetings with pilot village communities	12-18 October 2014	8 village communities and 2 Institutions	Tongatapu, Eua, Ha'apai, and Vava'u
Validation workshop - Key Government Ministries (MAFFF, MLNSR, MEIDMECCC, MIA), Civil Society, community representatives, and supporting partners UNDP, IFAD, SPC and FAO	31/3/2015	30	Tongatapu

1. Summarize key risks and impacts identified from the stakeholder engagement
 - A. New pests and diseases outbreak
 - B. Drought and climate calamities
 - C. Support from all community members

2. Have any of the stakeholders raised concerns about the project?

No specific concern raised but long time taken for the project to start implementation.

The LTO confirms the information above

Date 22/12/2015

Signature:

A handwritten signature in blue ink, appearing to read "M. Akaiva".

APPENDIX 3. RESULTS MATRIX

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
Project Objective: To strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes						
Component 1: Improving the enabling environment for integrated land and agro-ecosystem management.						
1.1: Increased acknowledgement and incorporation of integrated land and agro-ecosystem management principles in national policies, laws, and regulations	Number of ILAM Policy Intention Papers cited in sectoral policies, strategies and plans	No Policies specifically indicate intention to promote ILAM.	At least one (1) Policy Intention Paper developed, related to a key sector in ILAM approach.	At least 3 ILAM Policy Intention Papers cited in sectoral policies, strategies and plans.	Review of sectoral policy, strategy and planning documents	High level commitment from MAFFF to influencing sectoral policies and plans
<p><i>Output 1.1.1: Policy intention papers to inform sectoral policy and planning processes</i></p> <p><i>Output 1.1.2: National Land Use Policy document</i></p>						
1.2: Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide	Number of 'complete watershed' areas with up to date cadastral maps used for GIS-based applications for land use planning and for monitoring land use changes over time.	None of the 'complete watershed' areas i.e., project locations have up-to-date allotment cadastre layer of map data available for developing mapping products.	Up-to-date allotment cadastre layer of map data available for developing mapping products.	4 'complete watershed' areas, , with completed up to date cadastral maps used for GIS-based applications for land use planning and for monitoring land use changes over time.	Review of GIS-based applications	Staff stability in MLSNR
	Degree of completion of allotment map data capture and quality improvement work	Less than 10% of both the tax and town allotments in the right allotment map data quality for digital capture	Allotment map data capture and quality improvement work at least 70% completed	Allotment map data capture and quality improvement work 100% completed.	MLSNR reports	
	Level of in house capacity in MLSNR for data capture and input	Tonga SOLA system not able to utilize spatial functionality of SOLA to deal with the cadastral mapping due to significant gaps in	Tools required for data improvement work in place and local staff received training on these tools.	By project end MLSNR staff have assumed all responsibility for data capture and input	MLSNR reports	

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
		capacity for data capture and data quality.				
	Capacity of MLSNR to streamline business processes and accept applications and new survey plan data digitally through the internet.	Land administrative processes and services predominantly paper-based		MLSNR is actively accepting applications and new survey plan data digitally through the internet.	MLSNR reports	
<i>Output 1.2.1: National System of Land Administration enhanced, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure.</i>						
<u>1.3</u> Improved strategic planning of forest resources	Extent of application of National Strategic Forest Development Plan by Central and local government bodies and civil society organizations	No National Strategic Forest Development Plan (NSFDP) exists to implement the 2009 Tonga Forest Policy.	A draft NSFDP prepared, with participation of local government and civil society organizations.	Central and local government bodies and civil society organizations have reflected the provisions of the Plan in their own operational plans	Review of operational plans	Buy-in to the NSFDP among key stakeholder institutions
	Degree to which National Forest Monitoring System (FMS) is utilised in planning	No Forest Monitoring System in place	Conceptual design and workplan for establishing the FMS developed; implementation at least 15% completed.	A fully functional FMS is in place and its data outputs are being used in planning by key entities of central and local Government and civil society organisations.	Review of FMS Interviews with members of user entities Review of planning documents using FMS data	
<i>Output 1.3.1: National Strategic Forestry Development Plan developed Output 1.3.2: National Forest Monitoring system</i>						
Component 2: Site-based capacities for evidence-based negotiation of land use planning, management and tenure rights						
<u>2.1:</u> Capacities for evidence-based and negotiated formulation of resource	Frequency of meeting of multi-stakeholder mechanisms in target locations	N/A	Multi-stakeholder mechanisms are active at least twice per year in target locations	Multi-stakeholder mechanisms are active at least twice per year in target locations	Minutes of meetings of multi-stakeholder mechanisms	Recognition by members of target communities of the need to enter into

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
management plans at landscape and village levels, clarification of farmers' tenure rights and obligations	Representativeness of participation in multi-stakeholder mechanisms in target locations	N/A	All key stakeholder groups (commoners and nobles, men and women) participate actively in the mechanisms	All key stakeholder groups (commoners and nobles, men and women) participate actively in the mechanisms	Minutes of meetings of multi-stakeholder mechanisms	negotiation and resolve issues Social and cultural acceptance of multi-stakeholder negotiation
	Percentage of participants in multi-stakeholder mechanisms consider that the mechanism contributes significantly to resolving issues that impede equitable and sustainable approaches to land management	N.A	50%	80%	Questionnaires, interviews and focus groups with participants	
	Degree of initial implementation of 'Eua Watershed Management Plan (WMP)	Inter-sectoral Committee established with GIZ support, to coordinate work on a Catchment Area Management Plan.	Draft Plan developed, including identification of alternatives for farmers to reduce encroachment, and rehabilitation plans for degraded forest areas.	Operational plan developed for the implementation of the 'Eua WMP over at least the project period, and corresponding activities implemented in accordance with the plan.	Review of operational plan Interviews with entities and communities involved in plan implementation	
	Effectiveness of the Plan in reducing encroachment on forests in the watershed	75 ha of farmed land within the catchment areas (45 registered tax allotments) relocated and rehabilitated with forest as a conservation area	90 ha of farmed land rehabilitated with forest as part of the expanded 'Eua Watershed Catchment area under the WMP	No new instances of clearance of forests in the watershed for agriculture	Interviews with community members, direct observations	
<p><i>Output 2.1.1: Multi-stakeholder mechanisms for the negotiation of resource management and tenure</i></p> <p><i>Output 2.1.2: Negotiated and evidence-based plans for land use and integrated agroecosystem management at landscape and village levels</i></p>						

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
	<i>Output 2.1.3: 'Eua Watershed Area Management Plan developed, and implemented</i>					
Component 3: Strengthening of capacities for the formulation and implementation of sustainable land management practices with an integrated R2R approach						
3.1: Increased capacities in Government institutions and NGOs for identifying and supporting SLM practices	Numbers of staff members in Government institutions and NGOs who have received effective training through the modules	None	8 members of Government institutions ¹ and 14 members of NGOs ² have received training through the modules and show improved knowledge, attitudes and practices (KAP) as a result	20 members of Government institutions and 28 members of NGOs have received training through the modules and show improved knowledge, attitudes and practices (KAP) as a result	Records of training events, KAP surveys.	Stability of staff members Receptivity of members of target institutions (at technical and strategic levels) to integrated, participatory approaches to SLM
	Number of members in Government institutions and NGOs making regular use of the training manuals	None	8 members of Government institutions and 14 NGOs report using the training manuals as regular guides for their work.	20 members of Government institutions and 28 members of NGOs report using the training manuals as regular guides for their work.	Staff interviews.	
<i>Output 3.1.1: Training modules for extension agents</i> <i>Output 3.1.2: Manuals for use by extension agents</i>						
3.2: Increased capacities in local communities to develop, apply and adapt SLM practices	Number of tax allotments ('api tukuhau) in target localities on which integrated agroecosystem management practices are applied, including more than one of the following:		75 'api tukuhau (tax allotments) covering 250ha, with at least 12 'api tukuhau covering 40ha in each of the target localities	225 'api tukuhau covering 750ha, with at least 30 'api tukuhau covering 100ha in each of the target localities	Direct inspections of target localities	Community members continue to consider benefits of integrated systems to justify investments, and that they are compatible with social and cultural norms

¹ 4 Field Project Officers + 4 MAFFF Extension Officers (1 per island group)

² 4 from TRIP (1 in each island group) + 4 Langafonua'a Fafine Tonga (1 rep per island group) + 4 Tonga Livestock Farmers Council (1 per island Group) + 2 Agriculture Schools (1 Hango, 1 Tupou)

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
	<ul style="list-style-type: none"> - Use of piggery digestate as fertiliser - Use of cover crops - Enrichment of fallows - Integrated pest management - Increased use of agroforestry trees for animal feed, household or commercial tree products and/or nutrient cycling 					
	Reduction in the amounts of firewood collected from vulnerable forest areas (in the target localities where such forest areas exist).	Baseline to be established at project start	25% reduction over baseline levels (baseline to be established at project start)	75% reduction over baseline levels	Interviews, questionnaires or focus groups	
	Percentage increase in water harvesting and storage capacity in target communities (m ³ /month).	Baseline to be established at project start	At least 20% increase in water storage capacity in whole area where piggeries and intercropping systems will be covered under each ILAMP.	At least 50% increase in water storage capacity in whole area where piggeries and intercropping systems will be covered under each ILAMP.	Household surveys, focus groups and field inspections	
	Availability of water to local communities in target localities	Baseline to be established at project start	No net reduction in water availability for domestic uses in pilot communities, despite the establishment of piggeries.	No net reduction in water availability for domestic uses in pilot communities, despite the establishment of piggeries.	Household surveys and focus groups	

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
	Percentage reduction in crop damage and loss from roaming pigs in pilot communities and demonstration sites.	Baseline to be established at project start	On average farmers in the pilot communities report a 25% reduction in the areas of crops damaged by roaming pigs.	On average farmers in the pilot communities report a 75% reduction in the areas of crops damaged by roaming pigs. The total area benefitting from reduced degradation over the life of the project will be 245ha.	Household surveys, focus groups and field inspections	
	Numbers of farmers in target localities with increased crop yields	Baseline to be established at project start	12 farmers in each target locality with 15% increases in crop yields over 40ha.	30 farmers in each target locality with 15% increases in crop yields over 100ha.	Household surveys, focus groups and field inspections	
	Numbers of farmers in target localities who report an increase of at least 20% in the numbers of established (live after 1 year) trees on their farms	Baseline to be established at project start	75 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their farms	225 farmers report an increase of at least 20% in the numbers of established (live after 1 year) trees on their farms	Farmer interviews corroborated by selective ground truthing	
	Avoidance of CH ₄ emissions as a result of the use of piggery waste as biogas fuel	N/A	247tCO ₂ eq/year	247tCO ₂ eq/year (988t total by project end)	Inspections of numbers of pigs managed, biodigester volumes and effectiveness, and numbers of households using biogas as fuel	
	Numbers of households benefiting from biogas produced from piggery biodigesters	No households use biogas and 70% use bottled gas	70, with a corresponding 7% reduction in the amounts of bottled gas used	130, with a corresponding 14% reduction in the amounts of bottled gas used	Household interviews/questionnaires	

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
	Numbers of people in target villages where pig management practices have been modified who report no reduction in their abilities to meet social and cultural obligations	Baseline to be established at project start	100% of interviewees in villages where pig management practices have been modified report that there has been no reduction in their abilities to meet social and cultural obligations	100% of interviewees in villages where pig management practices have been modified report that there has been no reduction in their abilities to meet social and cultural obligations	Participatory retrospective time line exercises with community members	
<p><i>Output 3.2.1: Demonstration modules for integrated agroecosystem management systems</i></p> <p><i>Output 3.2.2: Farmer field schools for participatory problem analysis and development of SLM practices</i></p> <p><i>Output 3.2.3: Extension modules applied in target communities</i></p>						
3.3. Increased capacities for the formulation and implementation of forest restoration plans, and for supporting improved management of forests, mangroves, and trees outside forests	Area in target localities covered by operational plans and Sustainable Forest Management Agreements (SFMAs) that are under effective implementation	No areas under SFMAs		Forestry Division and communities concerned agree that the provisions of operational plans and SFMAs covering 150ha ³ are being met	Review of plans and SFMAs, interviews with Forestry Division staff and community members	Continued commitment of community members to reforestation and forest protection
	Numbers of tree nurseries nationwide able to meet their seed supply requirements	No nurseries currently meet seed supply requirement	30% of tree nurseries nationwide are able to meet at least 90% of their seed supply requirements	80% of tree nurseries nationwide are able to meet at least 90% of their seed supply requirements	Forestry Division records based on nursery reports	
	Number of tree nurseries nationwide with long term funding needs ensured	No nursery has secure long term funding	30% of tree nurseries nationwide with long term funding needs ensured (from sources other than short term project-based support)	80% of tree nurseries nationwide with long term funding needs ensured (from sources other than short term project-based support)	Interviews with Forestry Division and nursery managers	

³ Assuming 20% of each tax allotment = 225 total covering 750ha to be trees/forest

Outcomes	Indicators	Start of Project Baseline	Mid-term project Target	End of Project Target	Means of Verification	Assumptions
	Area of agricultural land returned to forest use in the target localities (where land managers express intention to maintain the area under forest and there are at least XX trees/ha already present alive after 1 year)	Baseline to be established at project start	30ha	100ha	Interviews with land managers, and selective surveys	
<i>Output 3.3.1: Operational plans for forest restoration, including mangroves, formulated and implemented Output 3.3.2: Systematisation of traditional tree management systems Output 3.3.3: Sustainable Forestry Management Agreements Output 3.3.4: Improved mechanisms for supply of tree seed and planting materials Output 3.3.5: Training modules on forest restoration and management, for Forestry Division staff and community members</i>						
Outcome 4.1 Project implementation is based on results-based management and application of lessons learned and good practices in current and future interventions.						
<u>4.1</u> Project implementation is based on results-based management and application of lessons learned and good practices in current and future interventions.	Number of ILAMS reports presented at R2R regional meetings or shared with R2R regional networks	N/A	At least 2 technical reports presented at R2R regional meetings or disseminated through R2R regional networks	At least 2 technical reports presented at R2R regional meetings or disseminated through R2R regional networks	Review of reports	Stability of staff
	Number of Technical or Policy reports published on MAFFF website and ECC Portal	N/A	At least 4 Technical or Policy reports published on MAFFF website and ECC Portal	At least 10 Technical or Policy reports published on MAFFF website and ECC Portal	Review of reports	
	<i>Output 4.1.1: Monitoring and evaluation system established, supporting adaptive project management Output 4.1.2: Mechanisms for effective management and dissemination of knowledge within Tonga and the region</i>					

APPENDIX 4. WORKPLAN

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4					
			Q1	Q2	Q3	Q4														
Component 1: Improving the enabling environment for integrated land and agro-ecosystem management.																				
Outcome 1.1: Increased acknowledgement and incorporation of integrated land and agro-ecosystem management principles in national policies, laws, and regulations																				
<i>Output 1.1.1:</i> Policy intention papers to inform sectoral policy and planning processes	Activity 1.2.1.1: Review policy and legal frameworks of relevance to creating an enabling environment for the adoption and scaling up of integrated land and agro-ecosystem approaches.	MLNSR, FAO																		
	Activity 1.2.1.2: Develop a series of Policy Intention reference papers to inform sectoral policy and planning processes on issues related to integrated land and agro-ecosystem approaches.	MLNSR, FAO																		
<i>Output 1.1.2:</i> National Land Use Policy document	Activity 1.1.2.1: Provide advisory, facilitation and drafting support to Government, in consultation with other key stakeholders, for the production of the National Land Use Policy document.																			
Outcome 1.2: Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide																				
<i>Output 1.2.1:</i> Enhanced National System of Land Administration, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure.	Activity 1.2.1.1: Implement key software and configuration tasks necessary for data improvement work to ensure quality allotment map data necessary for the existing spatial functionality in SOLA to be included in Tonga SOLA.	MLNSR, FAO																		
	Activity 1.2.1.2: Define and institute regular data maintenance procedures to ensure consistent quality of digital map definitions of tax and town allotments, necessary for inclusion of cadastral data and cadastral functionality in the Tonga SOLA based land administration system.	MLNSR, FAO																		
	Activity 1.2.1.3: Develop and make available GIS-based applications that utilize the spatial and cadastral functionalities of Tonga SOLA for monitoring land use changes over time at the village pilot sites under Activity 1.2.1.1.	MLNSR, FAO																		
Outcome 1.3 Improved strategic planning of forest resources																				
<i>Output 1.3.1:</i> National Strategic Forestry Development Plan developed	Activity 1.3.1.1: Analyse and review existing policy, legislative framework and institutional arrangements as related to sustainable forest management.	MAFFF, FAO, SPC																		
	Activity 1.3.1.2: Develop a Strategic Forestry Development Plan to operationalize the Tonga Forest Policy.	MAFFF, FAO, SPC																		

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
Output 1.3.2: National Forest Monitoring system	Activity 1.3.2.1: Confirm analysis of existing monitoring and data management capabilities	MAFFF, FAO, SPC, MLNSR																
	Activity 1.3.2.2: Provision of technical advisory and equipment support to the design and installation of the monitoring system	MAFFF, FAO, SPC																
	Activity 1.3.2.3: Conduct awareness programs and capacity building training in the use of GIS-based applications for planning and monitoring forests	MAFFF, FAO, SPC, MLNSR																
Component 2: Site-based capacities for evidence-based negotiation of land use planning, management and tenure rights																		
Outcome 2.1: Capacities for evidence-based and negotiated formulation of resource management plans at landscape and village levels, clarification of farmers' tenure rights and obligations																		
Output 2.1.1: Multi-stakeholder mechanisms for the negotiation of resource management and tenure	Activity 2.1.1.1: Initial dialogue and participatory diagnostics in target areas																	
	Activity 2.1.1.2: Facilitation of negotiation processes leading to social territorial agreements																	
	Activity 2.1.1.3: Participatory review and systematization of processes in order to define strategies for sustainability of negotiation and planning mechanisms																	
Output 2.1.2: Negotiated and evidence-based plans for land use and integrated agroecosystem management at landscape and village levels	Activity 2.1.2.1: Facilitation of detailed participatory spatial diagnostic and mapping exercises of target communities																	
	Activity 2.1.2.2: Collection, organization and presentation to target communities of information on technical- and tenure-related variables held in the SOLA and other sources																	
	Activity 2.1.2.3: Facilitation of participatory development of plans																	
	Activity 2.1.2.4: Formulation, validation and dissemination of plan documents																	
Output 2.1.3: 'Eua Watershed Area Management Plan developed, and implemented	Activity 2.1.3.1: Carry out key technical studies on water stocks, water flows and watershed activities, as baseline information for the development of the 'Eua Watershed Area Management Plan.	MAFFF, FAO, SPC																
	Activity 2.1.3.2: Carry out community consultations based on baseline information and complete the development of a 'Eua Watershed Area Management Plan, linked to the ILAMPs in village communities below the forest areas.																	

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	Activity 2.1.3.3: Implement key priorities identified in the 'Eua Watershed Area Management Plan, focusing on forest rehabilitation and replanting of trees in degraded areas.	MAFFF, FAO, SPC																
Component 3: Strengthening of capacities for the formulation and implementation of sustainable land management practices with an integrated R2R approach																		
Outcome 3.1: Increased capacities in Government institutions and NGOs for identifying and supporting SLM practices																		
3.1.1: Training modules for extension agents	Activity 3.1.1.1: Detailed analysis of capacity development needs																	
	Activity 3.1.1.2: Design and development of training modules and materials																	
	Activity 3.1.1.3: Realization of training sessions																	
	Activity 3.1.1.4: Follow-up evaluations and ongoing on the job support																	
3.1.2: Manuals for use by extension agents	Activity 3.1.2.1: Review of existing materials, and discussion of needs, content and format of materials with extension agents and community members																	
	Activity 3.1.2.2: Drafting, design and publication of materials																	
	Activity 3.1.2.3: Participatory validation of materials with extension agents and target communities.																	
Outcome 3.2: Increased capacities in local communities in the target localities to develop, apply and adapt SLM practices																		
3.2.1: Demonstration modules for integrated agroecosystem management systems	Activity 3.2.1.1: Confirmation of nature and specific locations of proposed demonstrations, in discussion with extension agents and local communities																	
	Activity 3.2.1.2: Design of demonstrations, with local participation and specialist technical inputs, including technical specifications (as needed), work plans and investment/procurement plans																	
	Activity 3.2.1.3: Establishment of demonstrations with full local participation																	
	Activity 3.2.1.4: Production of materials and plans for interpretation, systematisation and dissemination																	
3.2.2: Farmer field schools for participatory problem analysis and development of SLM practices	Activity 3.2.2.1: Participatory planning of FFS, including expressions of interest in participation by diverse community members;																	
	Activity 3.2.2.2: Facilitation of FFS, including provision of materials and equipment as needed.																	
	Activity 3.2.2.3: Facilitation of participatory systematization of results of FFS																	

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
3.2.3: Extension modules applied in target communities	Activity 3.2.3.1: Participatory identification and characterization of target audience, and analysis of capacity development needs.																	
	Activity 3.2.3.2: Design of training modules with participation of extension agents and community members.																	
	Activity 3.2.3.3: Delivery of training modules, following initial validation and adjustment as needed.																	
	Activity 3.2.3.4: Participatory monitoring of training effectiveness																	
Outcome 3.3. Increased capacities for the formulation and implementation of forest restoration plans, and for supporting improved management of forests, mangroves, and trees outside forests																		
3.3.1: Operational plans for forest restoration, including mangroves, formulated and implemented	Activity 3.3.3.1: Identify priority forest areas for rehabilitation and management in the National Strategic Forestry Development Plan																	
	Activity 3.3.3.2: Develop operational plans for priority areas in the National Strategic Forestry Development Plan																	
	Activity 3.3.3.3: Implement key priorities for forest rehabilitation																	
	Activity 3.3.3.4: Identify priority areas of mangrove forests under most threat from upstream agricultural activities																	
	Activity 3.3.3.5: Develop operational plans for protection and rehabilitation of priority areas of mangrove forests, excluding Fanga'uta lagoon.																	
3.3.2: Systematisation of traditional tree management systems	Activity 3.3.2.1: Participatory discussion and design of systematization methods																	
	Activity 3.3.2.2: Community-level exercises and farm visits for participatory systematization of tree management systems																	
	Activity 3.3.2.3: Facilitation of participatory documentation of systems																	
	Activity 3.3.2.4: Participatory feedback, validation and discussion of implications of results of systematization																	
3.3.3: Sustainable Forestry Management Agreements	Activity 3.3.3.1: Facilitation of participatory diagnostics of needs for improving tree management and characterization of farmers' needs for trees and their products, analysis of current difficulties in satisfying these needs, and their causes; and	MAFFF, FAO, SPC																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	participatory inventories of existing tree species and their propagation requirements.																	
	Activity 3.3.3.2: Forest Department to monitor these SFM Agreements to feed into the National Forest Monitoring system under Activity 3.1.1.3.	MAFFF, FAO, SPC																
3.3.4: Improved mechanisms for supply of tree seed and planting materials	Activity 3.3.4.1: Participatory review of needs for tree seed and planting materials, linked to the tree management diagnostics under Output 3.3.2.																	
	Activity 3.3.4.2: Advisory support to design/improvement of systems for supply of tree seed and planting materials																	
	Activity 3.3.4.3: Facilitation of the planning of village level nurseries, including organizational and technical aspects and provisions for sustainability																	
	Activity 3.3.4.4: Support (advice and materials) to the establishment and management of village level nurseries																	
3.3.5: Training modules on forest restoration and management, for Forestry Division staff and community members	Activity 3.3.5.1: Participatory identification and characterization of target audience, and analysis of capacity development needs.																	
	Activity 3.3.5.2: Design of training modules with participation of extension agents and community members.																	
	Activity 3.3.5.3: Delivery of training modules, following initial validation and adjustment as needed.																	
	Activity 3.3.5.4: Participatory monitoring of training effectiveness																	

Component 4: Knowledge Generation and Dissemination and Monitoring and Evaluation.

Outcome 4.1 Project implementation based on results-based management and application of lessons learned and good practices in current and future interventions, facilitated.

Output 4.1.1: <i>Knowledge generated by the project shared within Tonga and the region</i>	Activity 4.1.1.1: Develop knowledge and communications products for dissemination of knowledge, lessons and good practices within Tonga and across the Pacific.	MAFFF, FAO, SPC																
Output 4.1.2: <i>Monitoring and Evaluation of project activities conducted and used for adaptive project management purposes</i>	Activity 4.1.2.1: Develop and implement a project M&E system	MAFFF, FAO, SPC																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												

APPENDIX 5. BUDGET

Oracle code and description	Units	#	Unit cost	Expenditures by component				PM	GEF	Expenditures by year				
				1	2	3	4			Total	Total	1	2	3
5300 Salaries professionals														
BH Support -- Operations officer	Month	48	1,163	-	-	-	-	55,832	55,832	13,958	13,958	13,958	13,958	13,958
BH Support -- Finance & Procurement Associate	Month	48	1,163	-	-	-	-	55,832	55,832	13,958	13,958	13,958	13,958	13,958
Sub-total salaries professionals				-	-	-	-	111,664	111,664	27,916	27,916	27,916	27,916	27,916
5570 International Consultants														
Senior Technical Advisor	month	16	10,000	32,000	48,000	64,000	16,000	-	160,000	40,000	40,000	40,000	40,000	40,000
Policy and Legal Framework expert	month	3	10,000	30,000	-	-	-	-	30,000	15,000	15,000	-	-	-
Land Administration System Specialist	month	1.5	13,000	19,500	-	-	-	-	19,500	3,900	7,800	7,800	7,800	-
SOLA Software Development Specialist	month	3	15,000	45,000	-	-	-	-	45,000	9,000	18,000	18,000	18,000	-
Digital Cadastral Map Capture & QC Specialist	month	2	14,000	28,000	-	-	-	-	28,000	5,600	11,200	11,200	11,200	-
Community development and participation specialist	Month	5	10,000	-	37,500	12,500	-	-	50,000	12,500	12,500	12,500	12,500	12,500
Forestry Strategic Development Plan	Month	2	10,000	20,000	-	-	-	-	20,000	-	12,000	8,000	-	-
Forestry Monitoring System Specialist	month	2	12,000	24,000	-	-	-	-	24,000	-	12,000	12,000	-	-
Sub-total international Consultants				198,500	85,500	76,500	16,000	-	376,500	86,000	128,500	109,500	52,500	
National consultants														
Project Manager (PM)	month	48	3,000	28,800	43,200	57,600	14,400	-	144,000	36,000	36,000	36,000	36,000	36,000
Administration and Finance Assistant	month	48	1,500	14,400	21,600	28,800	7,200	-	72,000	18,000	18,000	18,000	18,000	18,000
Land Administration Management specialist	month	3	2,500	7,500	-	-	-	-	7,500	-	7,500	-	-	-
Local Open Source Software Development	month	24	2,500	60,000	-	-	-	-	60,000	12,000	24,000	24,000	24,000	-
Spatial Data Entry Operators	month	36	2,000	72,000	-	-	-	-	72,000	18,000	18,000	18,000	18,000	18,000
Forestry and Agro-forestry Specialist	month	45	2,000	5,000	-	85,000	-	-	90,000	22,500	22,500	22,500	22,500	22,500
ILAMS Communications & KM Specialist	month	12	1,667	-	-	-	20,000	-	20,000	4,000	6,000	6,000	4,000	-
Field Project Officer (Tongatapu)	month	41	1,200	-	-	49,200	-	-	49,200	7,872	13,776	13,776	13,776	13,776

Oracle code and description	Units	#	Unit cost	Expenditures by component				PM	GEF	Expenditures by year			
				1	2	3	4			1	2	3	4
Field Project Officer (Vava'u)	month	45	1,200	-	-	54,000	-	-	54,000	11,739	14,087	14,087	14,087
Field Project Officer (Ha'apai)	month	45	1,200	-	-	54,000	-	-	54,000	11,739	14,087	14,087	14,087
Field Project Officer (Eua)	month	45	1,200	-	6,000	48,000	-	-	54,000	11,739	14,087	14,087	14,087
Sub-total national Consultants	0	0	-	187,700	70,800	376,600	41,600	-	676,700	153,589	188,037	180,537	154,537
Sub-total consultants				386,200	156,300	453,100	57,600	-	1,053,200	239,589	316,537	290,037	207,037
5650 Contracts													
Fixed-dome Piggery/Biogas system design and installation	Lump sum	1	40,000	-	-	40,000	-	-	40,000	8,000	12,000	12,000	8,000
Small-scale Piggery/Biogas system design and installation	Lump sum	1	30,000	-	-	30,000	-	-	30,000	6,000	9,000	9,000	6,000
Design and develop ILAM toolkit	Lump Sum	1	15,000	-	-	15,000	-	-	15,000	15,000	-	-	-
Village ILAM Planning	Lump sum	4	7,500	-	-	30,000	-	-	30,000	15,000	15,000	-	-
Animal Health and Production services	Lump sum	1	30,000	-	-	30,000	-	-	30,000	-	12,000	12,000	6,000
Eua Watershed Management Plan	Lump Sum	1	20,000	-	20,000	-	-	-	20,000	-	12,000	8,000	-
Midterm evaluation	study	1	50,000	-	-	-	50,000	-	50,000	-	50,000	-	-
Final evaluation	study	1	50,000	-	-	-	50,000	-	50,000	-	-	-	50,000
Subtotal Contracts				-	20,000	145,000	100,000	-	265,000	44,000	110,000	41,000	70,000
5900 Travel													
Airfare - International	trips	20	1,000	10,544	4,542	4,064	850	-	20,000	5,000	5,000	5,000	5,000
Airfare - National	trips	150	300	12,482	4,708	25,044	2,766	-	45,000	11,250	11,250	11,250	11,250
DSA - Consultant	Lump sum	205	300	22,552	9,127	26,458	3,363	-	61,500	15,375	15,375	15,375	15,375
DSA - National Counterpart	Lump sum	260	200	19,068	7,717	22,371	2,844	-	52,000	13,000	13,000	13,000	13,000
Sub-total travel				64,646	26,094	77,936	9,824	-	178,500	44,625	44,625	44,625	44,625
5023 Training and workshops													
Communities project planning & management	meetings	12	1,000	-	-	12,000	-	-	12,000	2,400	3,600	3,600	2,400
ILAM Planning Workshops	workshop	4	1,000	-	4,000	-	-	-	4,000	4,000	-	-	-
GIS Training Workshop	workshop	5	1,500	7,500	-	-	-	-	7,500	7,500	-	-	-
Integrated Farming System Training	workshop	12	1,000	12,000	-	-	-	-	12,000	6,000	6,000	-	-
Piggery/Biogas management Training	Workshop	12	1,500	-	-	18,000	-	-	18,000	-	7,200	7,200	3,600
Livestock Feed and management Training	Workshop	12	1,500	-	-	18,000	-	-	18,000	-	7,200	7,200	3,600
Famers Field days	Workshop	8	1,500	-	-	12,000	-	-	12,000	3,000	3,000	3,000	3,000
Agro-forestry & Forestry management Training	workshop	8	1,000	-	-	8,000	-	-	8,000	-	4,000	4,000	-

Oracle code and description	Units	#	Unit cost	Expenditures by component					PM	GEF	Expenditures by year			
				1	2	3	4	Total			1	2	3	4
Watershed Management Planning Workshop	workshop	4	1,000	-	4,000	-	-	-	4,000	-	4,000	-	-	-
Project Inception workshop	workshop	1	2,000	-	-	-	2,000	-	2,000	2,000	-	-	-	-
PSC meetings	meetings	4	1,000	-	-	-	4,000	-	4,000	1,000	1,000	1,000	1,000	1,000
Mid-term evaluation workshop	workshop	1	1,500	-	-	-	1,500	-	1,500	-	1,500	-	-	-
Final evaluation workshop	workshop	1	1,500	-	-	-	1,500	-	1,500	-	-	-	-	1,500
Sub-total training				19,500	8,000	68,000	9,000	-	104,500	25,900	37,500	26,000	15,100	
6000 Expendable procurement														
Communications materials & Publications	Global	1	10,000	-	-	-	10,000	-	10,000	2,500	2,500	2,500	2,500	2,500
Shipping, freight transport, fuel	Global	3	10,000	-	-	30,000	-	-	30,000	12,000	12,000	6,000	-	-
Office Stationery	Global	1	5,200	1,040	1,560	2,080	520	-	5,200	1,300	1,300	1,300	1,300	1,300
Biogas digesters frame, equipment and supplies)	Global	6	7,500	-	-	75,000	-	-	75,000	22,500	30,000	22,500	-	-
Piggery shelter, fencing, construction materials	Global	4	25,000	-	-	100,000	-	-	100,000	30,000	40,000	30,000	-	-
Farm hand tools	Global	1	12,000	-	-	12,000	-	-	12,000	3,600	4,800	3,600	-	-
Rainwater harvesting kit (gutter, pipes, tank)	Global	10	3,000	-	-	30,000	-	-	30,000	6,000	15,000	9,000	-	-
Livestock Feed, vet drugs, and supplies	global	1	30,000	-	-	30,000	-	-	30,000	-	12,000	12,000	6,000	-
Seeds and planting materials	global	1	40,000	-	-	40,000	-	-	40,000	12,000	16,000	12,000	-	-
Nurseries (frame, netting, sheds, tools, irrigation)	global	4	15,000	-	-	60,000	-	-	60,000	18,000	24,000	18,000	-	-
Sub-total expendable procurement				1,040	1,560	379,080	10,520	-	392,200	107,900	157,600	116,900	9,800	
6100 Non-expendable procurement														
Office consumables for PMU & project sites	Equipment	4	13,000	10,400	15,600	20,800	5,200	-	52,000	26,000	10,400	10,400	5,200	
PMU vehicle & project sites	Equipment	3	35,000	21,000	31,500	42,000	10,500	-	105,000	105,000	-	-	-	-
Scanner, Network switches and routers	Equipment	1	30,000	6,000	9,000	12,000	3,000	-	30,000	30,000	-	-	-	-
Data Safe (for Backup)	Equipment	2	2,000	800	1,200	1,600	400	-	4,000	4,000	-	-	-	-
Computers printers, and accessories	Equipment	5	2,000	2,000	3,000	4,000	1,000	-	10,000	10,000	-	-	-	-
Boat Ha'apai MAFFF	Equipment	1	20,000	-	-	20,000	-	-	20,000	20,000	-	-	-	-
6100 Sub-total non-expendable procurement				40,200	60,300	100,400	20,100	-	221,000	195,000	10,400	10,400	5,200	
GOE budget														
Auditing	Audit	4	3,000	2,400	3,600	4,800	1,200	-	12,000	3,000	3,000	3,000	3,000	3,000

Oracle code and description	Units	#	Unit cost	Expenditures by component				PM	GEF	Expenditures by year				
				1	2	3	4			1	2	3	4	
Miscellaneous	Lump sum	1	6,890	1,378	2,067	2,756	689	-	6,890	1,723	1,723	1,723	1,723	
				6300 Sub-total GOE budget	3,778	5,667	7,556	1,889	-	18,890	4,723	4,723	4,723	4,723
				TOTAL	515,364	277,921	1,231,072	208,933	111,664	2,344,954	689,653	709,300	561,600	384,400

APPENDIX 6. THE PROJECT RISK LOG

Risk No.	Risk statement	Impact (effect on project organization if risk were to occur: H, MH, ML, or L)	Likelihood (estimate of likelihood: H, MH, ML, or L)	Overall ranking (Red/Amber/Green)	Mitigating action	Action owner
1	Limited collaboration by 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.	H	ML	Amber	Extensive community consultations are built into every aspect of the project. Project sites have been selected, in large part, on the basis of communities' expressions of interest and willingness to engage in project activities and the existence of relations of trust that have been built up through previous agency initiatives. Participation will further be ensured through the tangible socioeconomic benefits that will result from the project's actions in the short term, in the form of reductions in the damage to crops and lands caused by roaming pigs, and the provision of clean and accessible renewable energy in the form of biogas.	
2	Limited human and financial capacities in national Government: while the Government of Tonga (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	ML	H	Amber	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. In addition, the project will seek to minimize communities' dependence on Government support by promoting their capacities for	

Risk No.	Risk statement	Impact (effect on project organization if risk were to occur: H, MH, ML, or L)	Likelihood (estimate of likelihood: H, MH, ML, or L)	Overall ranking (Red/Amber/Green)	Mitigating action	Action owner
	reduced due to changes in national budget allocations.				the participatory generation, adaptation and dissemination of SLM technologies, based wherever possible on traditional knowledge; and “low-tech” approaches to the production and supply of planting materials.	
3	Unsuitability of technologies to local conditions: While the biogas/piggery system is already being piloted in Tongatapu, the integration of the system with whole farming system at the community-level to be piloted under this project has not been tested as yet in Tongatapu or the outer islands.	H	L	Amber	The project will build on previous experiences with piggery systems in Tonga and community-based biogas systems in other countries, which have shown a high level of uptake and sustainability. On-going training in operating and maintenance of the entire system would be provided during project implementation. In addition, this training will focus on developing capacities among community members to troubleshoot technical, social or other problems that may arise in the future; while the community-based governance mechanisms to be supported by the project will facilitate the resolution of any stakeholder conflicts that may arise regarding, for example, roles and responsibilities for the maintenance of the systems, or the equity of the distribution of their benefits.	
4	Climate change: climate change will pose a risk to the achievement of the project’s objective as it may result in the climatic coping limits of the	L	H	Green	The project’s approach will mitigate these risks by promoting capacities among extension agents and among community members to innovate and adapt the	

Risk No.	Risk statement	Impact (effect on project organization if risk were to occur: H, MH, ML, or L)	Likelihood (estimate of likelihood: H, MH, ML, or L)	Overall ranking (Red/Amber/Green)	Mitigating action	Action owner
	proposed production systems being exceeded (due to increases in temperature, rainfall variability and storm damage); land loss and degradation due to sea level rise, saltwater intrusion and salt spray impacts may also exacerbate productive pressures, and associated degradation, on the remaining land.				resource management systems they promote or apply, through the use of participatory, adaptive approaches to analysis, learning and technology generation such as farmer field schools. The project's support to negotiated approaches to addressing land use planning and land tenure issues will further enable communities to adapt to CC-related changes in biophysical and demographic conditions.	

APPENDIX 7. PROJECT ENVIRONMENTAL AND SOCIAL (E&S) SCREENING CHECKLIST

Would the project, if implemented?	Not Applicable	No	Yes	Unknown
I. FAO VISION/STRATEGIC OBJECTIVES				
Be in line with FAO's vision?			Yes	
Be supportive of FAO's strategic objectives?			Yes	
II. FAO KEY PRINCIPLES FOR SUSTAINABILITY IN FOOD AND AGRICULTURE				
Improve efficiency in the use of resources?			Yes	
Conserve, protect and enhance natural resources?			Yes	
Protect and improve rural livelihoods and social well-being?			Yes	
Enhance resilience of people, communities and ecosystems?			Yes	
Include responsible and effective governance mechanisms?			Yes	
ESS 1 NATURAL RESOURCES MANAGEMENT				
❖ Management of water resources and small dams				
Include an irrigation scheme that is more than 20 hectares or withdraws more than 1000 m3/day of water?		No		
Include an irrigation scheme that is more than 100 hectares or withdraws more than 5000 m3/day of water?		No		
Include an existing irrigation scheme?		No		
Include an area known or expected to have water quality problems?		No		
Include usage of non-conventional sources of water (i.e. wastewater)?		No		
Include a dam that is more than 5 m. in height?		No		
Include a dam that is more than 15 m. in height?		No		
Include measures that build resilience to climate change?			Yes	
❖ Tenure				
Negatively affect the legitimate tenure rights of individuals, communities or others ¹ ?		No		

¹ In accordance with Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT)
<http://www.fao.org/docrep/016/i2801e/i2801e.pdf>

ESS 2 BIODIVERSITY, ECOSYSTEMS AND NATURAL HABITATS				
Make reasonable and feasible effort to avoid practices that could have a negative impact on biodiversity, including agricultural biodiversity and genetic resources?			Yes	
Have biosafety provisions in place?				Unknown
Respect access and benefit-sharing measures in force?				Unknown
Safeguard the relationships between biological and cultural diversity?			Yes	
❖ Protected areas, buffer zones and natural habitats				
Be located such that it poses no risk or impact to protected areas, critical habitats and ecosystem functions?			Yes	
ESS 3 PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE				
❖ Planted forests				
Have a credible forest certification scheme, national forest programmes or equivalent or use the Voluntary Guidelines on Planted Forests (or an equivalent for indigenous forests)?			Yes	
ESS 4 ANIMAL - LIVESTOCK AND AQUATIC- GENETIC RESOURCES FOR FOOD AND AGRICULTURE				
Involve the procurement or provision of pesticides?		No		
❖ Aquatic genetic resources				
Adhere (Aligned) to the FAO Code of Conduct for Responsible Fisheries (CCRF) and its related negotiated instruments?	NA			
Be aligned, where applicable, with FAO's strategic policies established in the FAO Technical Guidelines for Responsible Fisheries (including aquaculture)?	NA			
❖ Livestock genetic resources				
Be aligned with the Livestock Sector Strategy including the animal disease, public health and land degradation provisions?			Yes	

ESS 5 PEST AND PESTICIDES MANAGEMENT				
Involve the procurement or provision of pesticides?		No		
Result in increased use of pesticides through expansion or intensification of production systems?		No		
Require the disposal of pesticides or pesticide contaminated materials?		No		
ESS 6 INVOLUNTARY RESETTLEMENT AND DISPLACEMENT				
Avoid the physical and economic displacement of people?		No		
ESS 7 DECENT WORK				
Adhere to FAO's guidance on decent rural employment, promoting more and better employment opportunities and working conditions in rural areas and avoiding practices that could increase workers' vulnerability?			Yes	
Respect the fundamental principles and rights at work and support the effective implementation of other international labour standards, in particular those that are relevant to the agri-food sector?			Yes	
ESS 8 GENDER EQUALITY				
Have the needs, priorities and constraints of both women and men been taken into consideration?			Yes	
Promote women's and men's equitable access to and control over productive resources and services?			Yes	
Foster their equal participation in institutions and decision-making processes?			Yes	
ESS 9 INDIGENOUS PEOPLES AND CULTURAL HERITAGE				
Are there any indigenous communities in the project area?		No		
Are project activities likely to have adverse effects on indigenous peoples' rights, lands, natural resources, territories, livelihoods, knowledge, social fabric, traditions, governance systems, and culture or heritage (tangible and intangible)?		No		
Are indigenous communities outside the project area likely to be affected by the project?		No		
Designed to be sensitive to cultural heritage issues?		No		

APPENDIX 8. ECONOMIC VIABILITY PROJECTIONS FOR PIGGERY/BIODIGESTER SYSTEMS, BY VILLAGE

1. Haveluliku/ Tongatapu (#households = 34) (USD)

Source	Baseline income ³²	RESOURCE FLOW (USD)									
		yr 0	yr 1	yr 2	yr 3	yr 4	yr 5	yr 6	yr 7	yr 8	yr 10
INCOME											
Agriculture ³³	27,692		277	692	2,077	2,769	2,769	2,769	2,769	2,769	2,769
Livestock ³⁴	9,929		99	248	745	993	993	993	993	993	993
Homemade Produce ³⁵	946					47	47	47	47	47	47
Handicraft ³⁶	19,249					192	192	192	192	192	192
Consumption Home Produce ³⁷	42,007					4,201	4,201	4,201	4,201	4,201	4,201
Biogas Cooking Energy ³⁸				480	480	480	480	480	480	480	480
INCREMENTAL REVENUES			376	1,421	3,302	8,683	8,683	8,683	8,683	8,683	8,683
CUMMULATIVE REVENUES		0	376	1,797	5,098	13,781	22,463	31,146	39,828	48,511	57,193
INVESTMENT COSTS³⁹											
Biogas digester frame, equipment, supplies		7,500									
Piggery shelter, fencing, construction materials		25,000					500				500
Farm hand tools		3,000					300				300
Rainwater harvesting kit (gutter, pipes, tank)		3,000									
Livestock Feed, vet drugs, and supplies		2,850					200	200	200	200	200
Labour - village (non-expense)			12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
CUMULATIVE COSTS		41,350	41,350	41,350	41,350	41,350	42,350	42,350	42,350	42,350	43,350
NET CASHFLOW		-41,350	-40,974	-39,553	-36,252	-27,569	-19,887	-11,204	-2,522	6,161	14,843
RESOURCE FLOW											

³² Calculated from Data Source - Tonga Statistics Department, Household Income and Expenditure Survey, 2009. Table 3.2: Average Annual Household Income for rural households. Calculated as average household subsistence income x # household in each pilot village

³³ Assumes 10% increase in agricultural production above current average income from use of organic fertilisers and soil improvements from waste, and increased production results in more feed for pigs

³⁴ Assumes 10% increases above current average income in livestock/pork production from better management, increase in feed and water availability

³⁵ Assumes 0.5% increase in Homemade produce from availability of natural resources

³⁶ Assumes 0.5% increase in handicraft from availability of natural resources

³⁷ Assumes 10% Replacement cost of food bill from consumption of home produce.

³⁸ Assumes 40 heads in piggery producing 146kg Biogas/yr = 16 x 9kg (LPG gas bottles). Assume USD\$30/9kg based on cost of LPG

³⁹ Shelter and fencing maintenance after 5 yrs, Replacement of farm tools after 5 yrs, Vet bills every year

2. Ta'anga/'Eua (# households = 17) (USD)

Source	Baseline income	RESOURCE FLOW (USD)										
		yr 0	yr 1	yr 2	yr 3	yr 4	yr 5	yr 6	yr 7	yr 8	yr 9	yr 10
INCOME												
Agriculture	12,090		121	302	907	1,209	1,209	1,209	1,209	1,209	1,209	1,209
Livestock	8,105		81	203	608	810	810	810	810	810	810	810
Homemade Produce	1,452					73	73	73	73	73	73	73
Handicraft	8,274					83	83	83	83	83	83	83
Consumption Home Produce	21,004					2,100	2,100	2,100	2,100	2,100	2,100	2,100
Biogas Cooking Energy				480	480	480	480	480	480	480	480	480
INCREMENTAL REVENUES			202	985	1,995	4,755	4,755	4,755	4,755	4,755	4,755	4,755
CUMMULATIVE REVENUES		0	376	1,187	3,181	7,937	12,692	17,447	22,202	26,957	31,712	36,468
INVESTMENT COSTS												
Biogas digester frame, equipment, supplies)		7,500										
Piggery shelter, fencing, construction materials		25,000					500					500
Farm hand tools		3,000					300					300
Rainwater harvesting kit (gutter, pipes, tank)		3,000										
Livestock Feed, vet drugs, and supplies		2,850					200	200	200	200	200	200
Labour - village (non-expense)			12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
CUMULATIVE COSTS		41,350	41,350	41,350	41,350	41,350	42,350	42,350	42,350	42,350	42,350	43,350
NET CASHFLOW		-41,350	-40,974	-40,163	-38,169	-33,413	-29,658	-24,903	-20,148	-15,393	-10,638	-6,882

3. Ha'ano Is/Ha'apai (# households = 34) (USD)

Source	Baseline income	RESOURCE FLOW										
		yr 0	yr 1	yr 2	yr 3	yr 4	yr 5	yr 6	yr 7	yr 8	yr 9	yr 10
Agriculture	7,227		72	181	542	723	723	723	723	723	723	723
Livestock	14,454		145	361	1,084	1,445	1,445	1,445	1,445	1,445	1,445	1,445
Homemade Produce	1,283					64	64	64	64	64	64	64
Handicraft	41,808					418	418	418	418	418	418	418
Consumption Home Produce	42,007					4,201	4,201	4,201	4,201	4,201	4,201	4,201
Biogas Cooking Energy				480	480	480	480	480	480	480	480	480
INCREMENTAL REVENUES			217	1,022	2,106	7,331	7,331	7,331	7,331	7,331	7,331	7,331
CUMMULATIVE REVENUES		0	376	1,239	3,345	10,676	18,007	25,338	32,669	40,000	47,331	54,662
INVESTMENT COSTS												
Biogas digesters frame, equipment and supplies)		7,500										
Piggery shelter, fencing, construction materials		25,000					500					500
Farm hand tools		3,000					300					300
Rainwater harvesting kit (gutter, pipes, tank)		3,000										
Livestock Feed, vet drugs, and supplies		2,850					200	200	200	200	200	200
Labour - village (non-expense)			12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
CUMULATIVE COSTS		41,350	41,350	41,350	41,350	41,350	42,350	42,350	42,350	42,350	42,350	43,350
NET CASHFLOW		-41,350	-40,974	-40,111	-38,005	-30,674	-24,343	-17,012	-9,681	-2,350	4,981	11,312

4. Mangia/Vava'u (# households = 45) (USD)

Source	Baseline income	RESOURCE FLOW										
		yr 0	yr 1	yr 2	yr 3	yr 4	yr 5	yr 6	yr 7	yr 8	yr 9	yr 10
INCOME												
Agriculture	19,488		195	487	1,462	1,949	1,949	1,949	1,949	1,949	1,949	1,949
Livestock	27,086		271	677	2,031	2,709	2,709	2,709	2,709	2,709	2,709	2,709
Homemade Produce	983					49	49	49	49	49	49	49
Handicraft	38,886					389	389	389	389	389	389	389
Consumption Home Produce	55,598					5,560	5,560	5,560	5,560	5,560	5,560	5,560
Biogas Cooking Energy				480	480	480	480	480	480	480	480	480
INCREMENTAL REVENUES			376	1,421	3,302	8,645	10,462	10,462	10,462	10,462	10,462	10,462
CUMULATIVE REVENUES		0	376	1,797	5,098	13,743	24,205	34,668	45,130	55,592	66,055	76,517
INVESTMENT COSTS												
Biogas digester frame, equipment, supplies)		7,500										
Piggery shelter, fencing, construction materials		25,000					500					500
Farm hand tools		3,000					300					300
Rainwater harvesting kit (gutter, pipes, tank)		3,000										
Livestock Feed, vet drugs, and supplies		2,850					200	200	200	200	200	200
Labour - village (non-expense)			12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
CUMULATIVE COSTS		41,350	41,350	41,350	41,350	41,350	42,350	42,350	42,350	42,350	42,350	43,350
NET CASHFLOW		-41,350	-40,974	-39,553	-36,252	-27,607	-18,145	-7,682	2,780	13,242	23,705	33,167

APPENDIX 9. DRAFT TERMS OF REFERENCE OF PROJECT MANAGEMENT UNIT STAFF

(to be finalized by the project inception)

Co-financed National Staff

1. National Project Director (NPD)

Job Title:	National Project Director (NPD)
Minimum number of years of relevant experience required:	At least 10 years of professional; experience in relevant areas
Expected Start of Assignment:	
Duration:	Full duration of Project (4 years)
Duty Station:	Nuku’alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR). The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation. The Government of Tonga will also appoint a national director for this FAO-supported project on a part-time basis. The National Project Director supports the project and acts as a focal point on the part of the Government. This position is provided under co-financing from MAFFF. This responsibility normally entails ensuring effective communication between partners and monitoring of progress towards expected results. The National Project Director is the party that represents the Government’s ownership and authority over the project, responsibility for achieving project objectives and the accountability to the Government and FAO for the use of project resources. In consultation with FAO, the MAFFF will designate the National Project Director from among its staff at not lower than the Deputy Director or Head of Division level.	
Description of task(s) and objectives to be achieved (per mission if applicable)	
Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at the Headquarters, Regional and Sub-regional offices and relevant ministries. The National Project Director will perform the following tasks: <ul style="list-style-type: none">• assume overall responsibility for the successful execution and implementation of the project, accountability to the Government and FAO for the proper and effective use of project resources;• serve as a focal point for the coordination of projects with other Government agencies, FAO and outside implementing agencies;• ensure that all Government inputs committed to the project are made available;• supervise the work of the National Project Manager and ensure that the National Project Manager is empowered to effectively manage the project and other project staff to perform their duties effectively;	

- select and arrange, in close collaboration with FAO, for the appointment of the National Project Manager and project staff, and consultants;
- supervise the preparation of project work plans, updating, clearance and approval, in consultation with FAO and other stakeholders;
- represent the Government institution (national counterpart) at the tripartite review project meetings, and other stakeholders meeting;
- Co-ordinate support from MAFFF OICs and staff in the outer islands to the implementation of project activities.

Key competencies/qualifications

- advanced degree from University or equivalent Institution in environmental management, environmental sciences, agriculture/horticulture science or related fields;
- a minimum of ten years of working experience, five of which should be in the management or coordination of international, regional or national projects related to the agriculture and environment;
- efficiency, competence and integrity as well as negotiating skills, tact and diplomacy are essential; and
- fluency in spoken and written English and Tongan is required.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Detailed work plan endorsed and implemented • Project implementation completed • Project Terminal report submitted 	End of Project

GEF-funded International Consultants

1. International Senior Technical Adviser (STA)

Job Title:	International Senior Technical Adviser (STA)
Minimum number of years of relevant experience required:	At least 10 years of professional; experience in relevant areas
Expected Start of Assignment:	Project month 1
Duration:	16 months
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands

Background

The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).

The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and

implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.

FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.

Description of task(s) and objectives to be achieved (per mission if applicable)

Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries. The Project Technical Adviser will perform the following tasks:

- prepare a detailed draft work programme to be reviewed and approved by the PSC;
- oversee the project M&E system
- prepare in close collaboration with the NPM and lead agencies for each component, progress and financial reports as specified in the Project Document;
- ensure adherence to the Implementing Agencies' administrative, financial and technical reporting requirements;
- ensure that financial allocations and expenditures are in accordance with UN financial rules and regulations;
- clear for approval administrative and financial reports, external communications and travel requests;
- provide guidance and supervision to the work of the staff of the PCU including with regard to the implementation of all activities specified in the Project Document, and ensure their timely completion;
- organize workshops, meetings, field visits including arranging logistics and providing reports as directed by the PSC;
- in consultation with NPM and LTO, establish Terms of Reference for Letters of agreement, sub-contractors and consultants;
- monitor the work of the consultants and sub-contractors, based on their Terms of Reference, and evaluate the quality of the outputs;
- provide technical inputs into project planning and implementation processes;
- following the guidance of the PSC, liaise with Lead Agencies regarding the implementation of components and activities and with donors involved in the project;
- facilitate the implementation of the project and promote exchanges of information among project participants;
- ensure, as far as practical, full participation of partners and stakeholders in the project, and prepare a strategy for strengthening partner and stakeholder participation; facilitate finalization and distribution of the project outputs and other documents;
- seek as required direction, and strategic guidance from the PSC regarding project implementation and execution of agreed activities over the entire period of the project;
- seek as required direction, and strategic guidance from the PSC regarding the establishment of timelines and milestones for provision of agreed outputs;
- prepare as required working documents to be submitted to meetings of the PSC and to FAO;
- review all documents prepared by third parties for submission to the PSC and FAO to ensure they meet the appropriate technical, scientific and English standards;
- prepare the draft agenda and draft annotated agenda for the PSC meetings in accordance with the rules of procedure of those bodies;
- liaise with other relevant GEF and non-GEF projects with focus on those referred to in the Project Document;

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|---|
| <ul style="list-style-type: none"> provide general leadership in terms of coordination of activities with other programmes and projects at global, regional and where feasible national, levels; oversee the allocation of funds in accordance with the directions of the Project Steering Committee; prepare in close consultations with all partners and executing agencies the annual PIR reports for transmission to the GEF; and assist the Evaluation and Oversight Unit as required in arrangements for the terminal evaluation. |
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Key competencies/qualifications
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- | |
|---|
| <ul style="list-style-type: none"> advanced degree from University or equivalent Institution in environmental management, environmental sciences, agriculture/horticulture science or related fields; a minimum of ten years of working experience, five of which should be in the management or coordination of international, regional or national projects related to the environment; computer literacy required; knowledge of the UN system and procedures preferred; efficiency, competence and integrity as well as negotiating skills, tact and diplomacy are essential; and fluency in spoken and written English is required. |
|---|

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> Detailed work plan and training program Completed training and progress report End of mission reports 	End of project

2. International Policy and Legal Framework expert

Job Title:	International Policy and Legal Framework Expert
Minimum number of years of relevant experience required:	10 years
Expected Start of Assignment:	Project month 2
Duration:	3 months, distributed over Project Years 1 and 2
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.</p>	

Description of task(s) and objectives to be achieved (per mission if applicable)				
Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, the consultant will provide advisory support leading to the achievement of project Outcome 1.1 (Increased acknowledgement and incorporation of integrated land and agro-ecosystem management principles in national policies, laws, and regulations). Specifically, the consultant will support the National Project Director, the Project Manager and Government partners through:				
<ul style="list-style-type: none"> - Reviewing policy and legal frameworks of relevance to creating an enabling environment for the adoption and scaling up of integrated land and agro-ecosystem approaches. - Advising the development of a series of Policy Intention reference papers to inform sectoral policy and planning processes on issues related to integrated land and agro-ecosystem approaches. - Providing advisory, facilitation and drafting support to Government, in consultation with other key stakeholders, for the production of the National Land Use Policy document. 				
Key competencies/qualifications				
<ul style="list-style-type: none"> • Higher degree in social/political sciences • Extensive experience in policy review and advice • Specific knowledge of policy issues related to natural resource management and tenure in Pacific islands, ideally with specific knowledge of Tonga. • fluency in spoken and written English is required. 				
Key performance indicators				
<table border="1"> <thead> <tr> <th>Expected Outputs (per mission if applicable):</th> <th>Required Completion Date:</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Policy/legal review • Policy intention papers • Advisory support resulting in the production of the National Land Use Policy Document </td> <td>Policy/legal review during Project Year 1, other outputs by the end of Project Year 2</td> </tr> </tbody> </table>	Expected Outputs (per mission if applicable):	Required Completion Date:	<ul style="list-style-type: none"> • Policy/legal review • Policy intention papers • Advisory support resulting in the production of the National Land Use Policy Document 	Policy/legal review during Project Year 1, other outputs by the end of Project Year 2
Expected Outputs (per mission if applicable):	Required Completion Date:			
<ul style="list-style-type: none"> • Policy/legal review • Policy intention papers • Advisory support resulting in the production of the National Land Use Policy Document 	Policy/legal review during Project Year 1, other outputs by the end of Project Year 2			

3. International Land Administration System Specialist

Job Title:	International Land Administration System Specialist
Minimum number of years of relevant experience required:	10 years
Expected Start of Assignment:	Project Month 3
Duration:	1.5 months, over Project Years 1-3
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).	
The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and	

policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.

FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.

Description of task(s) and objectives to be achieved (per mission if applicable)

Under the overall guidance of the FAO Sub-regional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, the consultant will provide advisory support to the National Project Director, the Project Manager, and the national Land Information Management specialist, in support of the achievement of project Outcome 1.2 (Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide), the delivery of Output 1.2.1 (National System of Land Administration enhanced, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure).

Specifically, the international consultant will:

- Review international best practice in relation to land administration systems of potential relevance to Tonga and communicate the results of the review effectively to national actors
- Review (in collaboration with the national consultants) current practice, capacities and systems in Tonga and generate recommendations on needs and strategies for improvement
- Provide ongoing advisory, monitoring and backstopping support to the national actors in the activities required for the achievement of Outcome 1.2.

Key competencies/qualifications

- Higher degree in land/natural resource management
- Minimum 10 years of experience in relation to land administration systems, preferably in Pacific island development countries
- fluency in spoken and written English is required.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Review of international best practice and materials for communication of the results to national actors • Review document of current practice, capacities and systems • Recommendations on needs and strategies for support • Ongoing reviews of performance and recommendations for improvement 	By end of Project Year 3

4. International SOLA Software Development Specialist

Job Title:	International SOLA Software Development Specialist
Minimum number of years of relevant experience required:	10 years
Expected Start of Assignment:	Project month 6
Duration:	3 months
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands

Background

The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).

The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.

FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.

Description of task(s) and objectives to be achieved (per mission if applicable)

Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, the consultant will provide advisory support to the national Open Source Software Development Specialist in support of the achievement of project Outcome 1.2 (Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide), the delivery of Output 1.2.1 (National System of Land Administration enhanced, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure), and the realization of the following activities:

- 1.2.1.1: Implement key software and configuration tasks necessary for data improvement work to ensure quality allotment map data necessary for the existing spatial functionality in SOLA to be included in Tonga SOLA.
- 1.2.1.2: Define and institute regular data maintenance procedures to ensure consistent quality of digital map definitions of tax and town allotments, necessary for inclusion of cadastral data and cadastral functionality in the Tonga SOLA based land administration system.
- 1.2.1.3: Develop and make available GIS-based applications that utilize the spatial and cadastral functionalities of Tonga SOLA for evidence-based negotiation of land use planning, management and tenure rights and for monitoring land use changes over time at the village pilot sites

Specifically, the international consultant will:

Key competencies/qualifications

- fluency in spoken and written English is required.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
•	

5. International Digital Cadastral Map Capture & QC Specialist

Job Title:	International Digital Cadastral Map Capture & QC Specialist
Minimum number of years of relevant experience required:	
Expected Start of Assignment:	
Duration:	4 months
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).	
The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.	
FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.	
Description of task(s) and objectives to be achieved (per mission if applicable)	
Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, will perform the following tasks:	
•	
Key competencies/qualifications	
• fluency in spoken and written English is required.	
Key performance indicators	
Expected Outputs (per mission if applicable):	Required Completion Date:
•	

6. International Community Development and Participation Specialist

Job Title:	International Community Development and Participation Specialist
Minimum number of years of relevant experience required:	10 years
Expected Start of Assignment:	Project Month 2
Duration:	5 months
Duty Station:	Nuku'alofa, Tonga

Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.</p>	
Description of task(s) and objectives to be achieved (per mission if applicable)	
<p>Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, will provide advisory support to the National Project Director, the Project Manager and other members of the PMU, especially the national Forestry and Agroforestry Specialist, the national Communications and Participation Specialist and the Field Project Officers, in order to ensure that the project’s interactions with and support to local communities optimize prospects for social sustainability, its contribution to livelihood sustainability and gender equity, and its compatibility with the cultural context.</p> <p>Specifically, the consultant will:</p> <ul style="list-style-type: none"> • Provide advisory support to PMU members and Government partners on conceptual and methodological aspects including sustainable livelihoods, governance and participation • Advise the national Communications and Participation Specialist on the development of the project’s communications and participation strategies, ensuring that social and gender equity are adequately considered • Provide specific methodological advice and backstopping on participatory and culturally-sensitive approaches for the delivery of Output 2.1.1 (Multi-stakeholder mechanisms for the negotiation of resource management and tenure) and Output 2.1.2 (Negotiated and evidence-based plans for land use and integrated agroecosystem management at landscape and village levels) • Advise on the validation and application of the project’s indicators in relation to social issues, ensuring that social and gender equity and livelihood sustainability are adequately considered • Provide ongoing oversight, monitoring and corrective support to aspects of the project related to community development and participation. 	
Key competencies/qualifications	
<ul style="list-style-type: none"> • Higher degree in social sciences • 10 years’ experience in community development • Specific experience and knowledge of participatory approaches to development, and gender issues • Specific experience of social and cultural issues in Pacific island rural communities, ideally in Tonga • Fluency in spoken and written English is required. 	
Key performance indicators	

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Training/advisory materials delivered to PMU members and Government counterparts • Conceptual and methodological recommendations for the project communication and participation strategies • Recommendations on the formulation and implementation of social aspects of project indicators 	Project Year 1

7. International Forestry Strategic Development Plan Adviser

Job Title:	International Forestry Strategic Plan Adviser
Minimum number of years of relevant experience required:	10 years
Expected Start of Assignment:	Project Year 2
Duration:	2 months, spread over Project Years 2 and 3
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.</p>	
Description of task(s) and objectives to be achieved (per mission if applicable)	
<p>Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, will provide advisory support for the delivery of Project Output 1.3.1 (National Strategic Forestry Development Plan). This plan will highlight the status and trends in forest cover, establish a long-term vision for Tonga's forests, identify short, medium- and long-term objectives, and provide a detailed action plan for the first five-year period, including priority areas, roles and responsibilities, and costing information. This Plan will serve to guide the Forestry Department and their partners in working together towards securing Tonga's forests for future generations. Specifically, the consultant will:</p> <ul style="list-style-type: none"> • Advise the International Policy and Legal Specialist consultant on aspects of his/her review of the policy and legal framework that are specifically relevant to the NSFDP; • Advise the PMU on, and participate in, stakeholder consultations required for the development of the NSFDP; 	

- Advise the PMU and national counterparts on the review and compilation of information required for the development of the NSFDP, including economic analyses of the value of Tonga's forests taking into account the ecosystem services they provide, legal and policy analyses, and institutional analyses.
- Advise national counterparts on the content and structure of the NSFDP, and review and comment on the NSFDP as it is drafted.

Key competencies/qualifications

- Higher degree in forestry and/or political sciences
- 10 years' experience in forest policy and planning
- Specific experience of forest policy and planning in Pacific island countries, ideally including Tonga
- Fluency in spoken and written English is required.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Review of key issues to be addressed in the NSFDP • Recommendations on stakeholder consultation processes required for the drafting of the NSFDP, highlighting specific issues to be considered • Recommendations on information requirements and corresponding methodologies for the drafting of the NSFDP • Recommendations for the content and structure of the NSFDP • Comments on drafts of the NSFDP. 	End of Project Year 3

8. International Forestry Monitoring System Specialist

Job Title:	International Forestry Monitoring System Specialist
Minimum number of years of relevant experience required:	10 years
Expected Start of Assignment:	Project Year 2
Duration:	2 months, spread over Project Years 2 and 3
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
The Global Environment Facility (GEF) has recently approved the "R2R Integrated Land and Agro-ecosystem Management Systems" with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).	
The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.	
FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.	
Description of task(s) and objectives to be achieved (per mission if applicable)	

The project will develop capacities in the Forest Division of MAFFF for generating and managing data on forest cover, underpinned by the GIS-based application utilized for the spatial functionality aspects of the Tonga SOLA. Support will also focus on developing capacities for the application of the information held in the monitoring system in operational planning of forest management and restoration, including the development of planning instruments and project design proposals. The application of the FMS, including the realisation of forest inventories and the management and use of the resulting data, will be carried out by the Forestry Division; this will form part of the Government of Tonga's co-financing contribution and ongoing activities in this regard (updating and management of data) will continue to be nationally funded after the project end. In support of this process, the tasks of the consultant (working under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries) will be as follows:

- Analyse existing monitoring and data management capabilities
- Generate specific recommendations for the provision of technical advisory and equipment support to the design and installation of the monitoring system
- Provide ongoing advisory, backstopping and corrective support to the development and implementation of the system

Key competencies/qualifications

- fluency in spoken and written English is required.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Review of existing monitoring and data management capabilities • Recommendations for the provision of technical advisory and equipment support to the design and installation of the monitoring system • Ongoing advisory, backstopping and corrective support to the development and implementation of the system 	End of Project Year 3

GEF-funded National Consultants

1. Project Manager (PM)

Job Title:	Project Manager
Minimum number of years of relevant experience required:	At least 10 years of professional experience in relevant areas
Expected Start of Assignment:	Project month 1
Duration:	Full duration of Project (4 years)
Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands

Background

The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).

The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate

degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.

FAO in collaboration with the Government of Tonga will set up a Project Management Unit within MAFF and will recruit a Project team, international and national constants (long and short term appointments) to co-ordinate and support project implementation.

Description of task(s) and objectives to be achieved (per mission if applicable)

Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, national Project Manager will be responsible for the followings tasks;

- assist coordination and implementation of project activities;
- act as secretary of the Project Steering Committee, call its meetings and establish its agendas in consultation with the NPD;
- organise project procurements of supplies, and organise project training workshop in Funafuti;
- facilitate farmer trainings in outer islands;
- provide assistance to the international consultants, SPC and FAO Technical Officers as necessary;
- conduct monitoring of project implementation;
- liaise with all project stakeholders on project information and facilitate implementation of project activities;
- prepare and submit progress reports to the Director and to FAO-SAP;
- perform any other duties deemed necessary for the successful execution of the project;
- assist the LTO in preparing a draft Terminal Report according to FAO and donor guidelines;
- assist co-ordination of the tripartite review project meetings, and other stakeholders meeting;

Key competencies/qualifications

- advanced degree from University or equivalent Institution in environmental management, environmental sciences, agriculture/horticulture science or related fields;
- a minimum of five years of working experience, five of which should be in the management or coordination of international, regional or national projects related to the agriculture and environment;
- efficiency, competence and integrity as well as negotiating skills, tact and diplomacy are essential; and
- fluency in spoken and written English and Tongan is required.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Detailed work plan endorsed and implemented • Monthly progress report and time sheets • Project Terminal report submitted 	End of project

2. Administration and Finance Assistant

Job Title:	Project Manager
Minimum number of years of relevant experience required:	At least 5 years of professional experience in relevant areas
Expected Start of Assignment:	Project month 1
Duration:	Full duration of Project (4 years)

Duty Station:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO in collaboration with the Government of Tonga will set up a Project Management Unit within MAFFF and will recruit a Project team, international and national constants (long and short term appointments) to co-ordinate and support project implementation.</p>	
Description of task(s) and objectives to be achieved (per mission if applicable)	
<p>Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional offices and relevant ministries, the Administrative and Finance Assistant will provide administrative and operational support to the implementation, monitoring and evaluation of the project for timely delivery of its outcomes and outputs. In particular he/she will perform the following tasks:</p> <ul style="list-style-type: none"> • Ensure smooth and timely implementation of project activities in support of the results-based work plan, through operational and administrative procedures according to FAO rules and standards; • Coordinate the project operational arrangements through contractual agreements with key project partners; • Arrange the operations needed for signing and executing Letters of Agreement (LoA) and Government Cooperation Programme (GCP) agreements with relevant project partners; • Maintain inter-departmental linkages with FAO units for donor liaison, Finance, Human Resources, and other units as required; • Undertake day-to-day management of the project budget, including the monitoring of cash availability, budget preparation and budget revisions to be reviewed by the Project Coordinator; • Ensure the accurate recording of all data relevant for operational, financial and results-based monitoring; • Ensure that relevant reports on expenditures, forecasts, progress against work plans, project closure, are prepared and submitted in accordance with FAO and GEF defined procedures and reporting formats, schedules and communications channels, as required; • Execute accurate and timely actions on all operational requirements for personnel-related matters, equipment and material procurement, and field disbursements; • Participate and represent the project in collaborative meetings with project partners and the Project Steering Committee, as required; • Be responsible for results achieved within her/his area of work and ensure issues affecting project delivery and success are brought to the attention of higher level authorities through the BH in a timely manner, • In consultation with the FAO Evaluation Office, the LTU, and the FAO-GEF Coordination Unit, support the organization of the mid-term and final evaluations, and provide inputs regarding project budgetary matters 	
Key competencies/qualifications	

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| <ul style="list-style-type: none"> • University Degree in Economics, Business Administration, or related fields. • Five years of experience in project experience in planning, project implementation and management/administration of development programmes including the preparation, monitoring and evaluation of development projects and operations procedures • Knowledge of FAO's project management systems. |
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Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Detailed work plan endorsed and implemented • Monthly progress report and time sheets • Project Terminal report submitted 	End of project

3. Land Information Management Specialist

Job Title:	Land Information Management Specialist
Minimum number of years of relevant experience required:	At least 5 years of professional; experience in relevant areas
Expected Start of Assignment:	Project year 2
Duration:	3 months
Location:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLNSR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.</p>
Description of task(s) and objectives to be achieved (per mission if applicable)	<p>The Land Administration IT Specialist will be part of the Project Management Unit (PMU) and will report to the Project Manager. He /she will be responsible for the overall coordination of all IT related project activities in Component 1 order to ensure that the related Project objectives are achieved, within the time schedule and within the financial plan. The consultant specific tasks include:</p> <ul style="list-style-type: none"> • support the MLNSR to prepare the IT Project implementation plan for the Component 1; • support the preparation and implementation of the Land administration and information technology capacity building and IT related technical training needs the IT unit within MLNSR. • implement decisions made by the Project Steering Committee, related to the IT in component 1 of the project;

- in cooperation with the Component coordinators and the Procurement specialists, make provisions for the delivery and installation of IT equipment, software and networks. For the most complex activities a short-term consultants could be hired;
- provide professional assistance and technical specifications for procurements of equipment and supplies;
- report to the Project Manager and MLNSR on a monthly basis on the status of the IT related parts of the project, introduce all significant issues, problems accrued, deadlines respected, propose solutions and makes provisions on those issues, which need the attention of the top management;

Key competencies/qualifications

- University degree from a recognised university in engineering or sciences or equivalent experience and training.
- Knowledge of the subject of GIS / LIS and spatial data management generally;
- Desirable knowledge: Planning, developing and evaluating a pilot project.
- At least 5 years of experience in IT Project Management, including monitoring, analyzing and tracking project progress and evaluation of IT projects;
- Experience in review and implementation of Land administration ICT/IM strategies;
- Desirable Experience: Experience working with land administration data on collection, analysis and dissemination; previous work in the land sector.
- Excellent interpersonal skills and command of written and spoken English.
- Able to work within a multidisciplinary and multi-cultural team.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Detailed work plan and training program • Completed training and progress report • End of mission reports 	End of Project Year 2

Funding source

GEF funds

Honorarium rate	DSA rate	Standard air ticket cost
USD 350/day	USD 220/day	USD 2000

4. Local Open Source Software Development Specialist

Job Title:	Local Open Source Software Development Specialist
Minimum number of years of relevant experience required:	At least 5 years of professional; experience in relevant areas
Expected Start of Assignment:	Project month 6
Duration:	24 months
Location:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project: will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLNSR).

The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.

FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.

Description of task(s) and objectives to be achieved (per mission if applicable)

The **Local Open Source Software Development Specialist** will be part of the Project Management Unit (PMU) and will report to the Project Manager. He /she will hold lead responsibility for the achievement of Outcome 1.2 of the project (reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide) and the delivery of output 1.2 (National System of Land Administration enhanced, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure). Specifically, he/she will be responsible for the following tasks:

- Implement key software and configuration tasks necessary for data improvement work to ensure quality allotment map data necessary for the existing spatial functionality in SOLA to be included in Tonga SOLA.
- Define and institute regular data maintenance procedures to ensure consistent quality of digital map definitions of tax and town allotments, necessary for inclusion of cadastral data and cadastral functionality in the Tonga SOLA based land administration system.
- Development GIS-based applications that utilize the spatial and cadastral functionalities of Tonga SOLA for evidence-based negotiation of land use planning, management and tenure rights and for monitoring land use changes over time at the village pilot sites.
- Report to the Project Manager on a monthly basis on progress towards the achievement of Outcome 2.1 and the delivery of Output 2.1.1.

Key competencies/qualifications

- University degree from a recognised university in engineering or sciences or equivalent experience and training.
- Knowledge of software development, data maintenance procedures and GIS-based applications;
- Desirable knowledge: land use planning, land management and tenure rights issues.
- At least 5 years of experience in IT, including software development, data maintenance, systems management and GIS;
- Desirable Experience: land use planning, land management and tenure rights projects.
- Excellent interpersonal skills and command of written and spoken English.
- Able to work within a multidisciplinary and multi-cultural team.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Software developed and implemented to ensure quality allotment map data necessary for the existing spatial functionality in SOLA to be included in Tonga SOLA. • Regular data maintenance procedures defined and implemented. • GIS-based applications developed, using spatial and cadastral functionalities of Tonga SOLA. • End of mission reports 	Project Year 3

5. Spatial Data Entry Operators

Job Title:	Spatial Data Entry Operators			
Minimum number of years of relevant experience required:	At least 5 years of professional experience in relevant areas			
Expected Start of Assignment:	Project month 2			
Duration:	36 weeks			
Location:	Nuku'alofa, Tonga			
Reports to:	FAO Subregional Coordinator for the Pacific Islands			
Background				
<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.</p>				
Description of task(s) and objectives to be achieved (per mission if applicable)				
<p>The Spatial Data Entry Operators will be part of the Project Management Unit (PMU) and will report to the Project Manager, under the orientation of the Land Administration Systems Specialist. They will be responsible for inputting spatial data into the System for Open Land Administration (SOLA), in order to ensure that the SOLA is made fully operational during the project lifetime and thereby that Output 1.2.1 (National System of Land Administration enhanced, and operational with spatial functionality of SOLA utilized to recommend allowable land uses, monitor land use changes over time and clarify tenure) is delivered and Outcome 1.2 (Reliable information on land tenure is available to guide land use planning and facilitate the application of sustainable land management nationwide) is achieved. By the end of the project responsibilities for ongoing data entry will be fully absorbed by Government staff, who will have received corresponding capacity development through the project.</p>				
Key competencies/qualifications				
<ul style="list-style-type: none"> • 				
Key performance indicators				
Expected Outputs (per mission if applicable):		Required Completion Date:		
<ul style="list-style-type: none"> • Existing data inputted into SOLA 		End of Project Year 2		

6. Forest and Agroforestry Management Specialist

Job Title:	Forest and Agroforestry Management Specialist
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Minimum number of years of relevant experience required:	At least 5 years of professional; experience in relevant areas
Expected Start of Assignment:	Project month 2
Duration:	45 months
Location:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands
Background	
<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistance on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.</p>	
Description of task(s) and objectives to be achieved (per mission if applicable)	
<p>The Forest and Agroforestry Management Specialist will be part of the Project Management Unit (PMU) and will report to the Project Manager. He /she will be responsible for the overall coordination of the implementation of the Component 3 activities in collaboration with the Forestry Division of MAFFF. Working in close collaboration with and support of the Field Project Officers in each target locality, specific tasks will include:</p> <ul style="list-style-type: none"> - Providing technical inputs into the development of training and extension modules and materials, and into the realization of demonstrations and farmer field schools training sessions related to forestry and agroforestry-related issues - Provision of technical inputs into the identification of priority forest and mangrove areas for rehabilitation and management in the National Strategic Forestry Development Plan, the development of operational plans for priority areas and oversight of forest rehabilitation activities - Support to and systematization of participatory diagnostics of needs for improving tree management, characterizations of farmers' needs for trees and their products, analyses of current difficulties in satisfying these needs, and their causes, participatory inventories of existing tree species and their propagation requirements, and participatory review of needs for tree seed and planting materials. - Advisory support to design/improvement of systems for supply of tree seed and planting materials - Advisory support to the planning and management of village level nurseries, including organizational and technical aspects and provisions for sustainability 	
Key competencies/qualifications	
<ul style="list-style-type: none"> • University degree from a recognised university in forestry conservation and management, agroforestry, or similar qualification relevant to these ToRs. • At least four years' experience in agriculture and forestry management and conservation activities. • Fluency in English. • Good inter-personal, negotiation and teamwork skills. 	

<ul style="list-style-type: none"> • Good computer skills, including ability to draft reports in MS Word. • Previous working experience in developing countries would be an advantage • Able to work within a multidisciplinary team. 	
Key performance indicators	
Expected Outputs (per mission if applicable): <ul style="list-style-type: none"> • Training and extension modules developed • Demonstrations and farmer field schools conducted • Participatory diagnostics of tree management practices and needs for support • Improved supply of seeds and planting materials • Sustainable village nurseries established 	Required Completion Date: End of project

7. Communications development and participation specialist

Job Title:	Communications development and participation specialist
Minimum number of years of relevant experience required:	At least 5 years of professional; experience in relevant areas
Expected Start of Assignment:	Project month 2
Duration:	12 months total, spread over all 4 years of the project
Location:	Nuku'alofa, Tonga
Reports to:	FAO Subregional Coordinator for the Pacific Islands

Background

The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 6. million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).

The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.

FAO as the GEF implementing agency will recruit a pool of international and national experts and support staff to assist project implementation.

Description of task(s) and objectives to be achieved (per mission if applicable)

The Communications and Participation Specialist will be part of the Project Management Unit (PMU) and will report to the Project Manager. He/she will support the PMO on communicating and disseminating messages from the project, and on ensuring the effective participation of stakeholders in the implementation of the project.. The assignment will cover written, verbal, electronic and other forms of media. The aim is to ensure that PSC is raised on the agenda of decision-makers and politicians at the national and local level in Tonga. This assignment contributes to all Outcomes of the project. The consultant will work with the NPC and the PTA. Specific tasks include:

- determine the principal messages to be disseminated by the Project and the key audiences for each message;
- determine the optimal media for conveying the messages to the targeted audience;
- draft a communication strategy;

- train PMO and MAFFF staff on communication techniques;
- design a system for monitoring the effectiveness of the project's communications;
- work with the PMO staff to design, develop and support use of communication tools as the project evolves, conveying the project findings and outputs: websites, posters, bill boards, leaflets, TV interviews, radio interviews, etc.
- In consultation with project stakeholders, Government partners and other members of the PMU, and in accordance with advice to be provided by the international participation specialist, develop a participation strategy that will optimize the participation of all stakeholders, particularly women and sectors with low levels of empowerment in relation to natural resource management, in decisions regarding project planning and management, and monitoring.
- Provide ongoing monitoring and follow-up support to the implementation of the communications and participation strategies, and recommend corrective actions where necessary

Key competencies/qualifications

- Higher degree in social sciences, media relations and communications with an emphasis on rural/community development
- At least ten years' experience in social aspects of rural development, with an emphasis on participatory approaches, communications and media relations;
- demonstrated ability to (i) train (ii) develop communication tools – written, verbal, electronic, etc.; (iii) interact in a culturally sensitive and participatory manner with rural communities
- fluency in spoken and written English and Tongan is required.
- Previous work in the agriculture sector is highly preferred.

Key performance indicators

Expected Outputs (per mission if applicable):	Required Completion Date:
<ul style="list-style-type: none"> • Communications strategy • Communications materials • Participation strategy • Ongoing 	<p>Strategies and materials to be completed by end of project year 1</p> <p>Ongoing support to be provided until the end of the project</p>

8. Field Project Officers (FPOs – 4 positions)

Job Title:	Field Project Officers (FPOs)
Minimum number of years of relevant experience required:	At least 5 years of professional; experience in relevant areas
Expected Start of Assignment:	Project month 2
Duration:	Tongatapu: 41 months Vava'u: 45 months Ha'apai: 45 months 'Eua: 45 months
Duty Station:	Tongatapu and Outer Islands Project Sites - 'Eua, Vava'u, and Ha'apai (total 4 positions)
Reports to:	Project Manager & Respective MAFFF OICs
Background	
The Global Environment Facility (GEF) has recently approved the "R2R Integrated Land and Agro-ecosystem Management Systems" with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).	

The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.

FAO in collaboration with the Government of Tonga will set up a Project Management Unit within MAFF and will recruit a Project team, international and national constants (long and short term appointments) to co-ordinate and support project implementation.

Description of task(s) and objectives to be achieved (per mission if applicable)

Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional office and relevant ministries. The Field Project Officers (FPOs) will perform the following tasks:

Under the overall guidance of the FAO Subregional representative for the Pacific (SRC), the technical supervision of the Lead Technical Officer, NPD, the national project manager will be responsible for the followings tasks;

- assist coordination and implementation of project activities in all target localities;
- facilitate farmer trainings, and management of the demonstration sites and farmer field schools in the target localities;
- provide assistance to the MAFF on nursery propagations of planting material for distributions;
- conduct monitoring of project implementation and regular reporting;
- liaise with all project stakeholders on project information and facilitate implementation of project activities;
- provide technical support to farmers and communities;
- prepare and submit progress reports to the PM;
- perform any other duties deemed necessary for the successful execution of the project;

Key competencies/qualifications

- diploma or degree from University or equivalent Institution in environmental management, environmental sciences, agriculture/horticulture science or related fields;
- a minimum of five years of working experience, five of which should be in the management or coordination of international, regional or national projects related to the agriculture and environment;
- efficiency, competence and integrity as well as negotiating skills, tact and diplomacy are essential; and
- fluency in spoken and written English and Tongan is required.

Key performance indicators

<i>Expected Outputs (per mission if applicable):</i>	<i>Required Completion Date:</i>
<ul style="list-style-type: none"> • Detailed work plan endorsed and implemented • Monthly progress report and time sheets, showing successful completion of the required tasks and deliverables • Project Terminal report submitted 	End of project

9. Operations officer (Budget holder support)

Job Title:	Operations officer (Budget holder support)
Minimum number of years of relevant experience required:	5 years
Expected Start of Assignment:	

Duration:	48 months
Duty Station:	Apia, Samoa
Reports to:	Sub-regional Coordinator, FAOSAP
Background	
<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO in collaboration with the Government of Tonga will set up a Project Management Unit within MAFFF and will recruit a Project team, international and national constants (long and short term appointments) to co-ordinate and support project implementation.</p>	
Description of task(s) and objectives to be achieved (per mission if applicable)	
<p>Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional office and relevant ministries. The Field Project Officers (FPOs) will perform the following tasks:</p> <p>Under the overall guidance of the FAO Subregional representative for the Pacific (SRC), the technical supervision of the Lead Technical Officer, NPD, the national project manager will be responsible for the followings tasks;</p> <ul style="list-style-type: none"> • Ensure smooth and timely implementation of project activities in support of the results-based work plan, through operational and administrative procedures according to FAO rules and standards; • Coordinate the project operational arrangements through contractual agreements with key project partners; • Arrange the operations needed for signing and executing Letters of Agreement (LoA) and Government Cooperation Programme (GCP) agreements with relevant project partners; • Maintain inter-departmental linkages with FAO units for donor liaison, Finance, Human Resources, and other units as required; • Undertake day-to-day management of the project budget, including the monitoring of cash availability, budget preparation and budget revisions to be reviewed by the Project Coordinator; • Ensure the accurate recording of all data relevant for operational, financial and results-based monitoring; • Ensure that relevant reports on expenditures, forecasts, progress against work plans, project closure, are prepared and submitted in accordance with FAO and GEF defined procedures and reporting formats, schedules and communications channels, as required; • Execute accurate and timely actions on all operational requirements for personnel-related matters, equipment and material procurement, and field disbursements; • Participate and represent the project in collaborative meetings with project partners and the Project Steering Committee, as required; • Be responsible for results achieved within her/his area of work and ensure issues affecting project delivery and success are brought to the attention of higher level authorities through the BH in a timely manner, • In consultation with the FAO Evaluation Office, the Project Task Force, and the FAO-GEF Coordination Unit, support the organization of the mid-term and final evaluations, and provide inputs regarding project budgetary matters. 	

Key competencies/qualifications
<ul style="list-style-type: none"> • University Degree in Economics, Business Administration, or related fields. • Five years of experience in project experience in planning, project implementation and management/administration of development programmes including the preparation, monitoring and evaluation of development projects and operations procedures • Knowledge of FAO's project management systems.
Key performance indicators
<i>Expected Outputs (per mission if applicable):</i>
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<i>Required Completion Date:</i>
End of project

10. Finance & Procurement Associate (Budget holder support)

Job Title:	Finance & Procurement Associate (Budget holder support)
Minimum number of years of relevant experience required:	5 years
Expected Start of Assignment:	
Duration:	48 months
Duty Station:	Apia, Samoa
Reports to:	Sub-regional Coordinator, FAOSAP
Background	<p>The Global Environment Facility (GEF) has recently approved the “R2R Integrated Land and Agro-ecosystem Management Systems” with GEF total budget of USD 2.34 million and total co-financing of USD 7 million. This project will be implemented by FAO in collaborations with the SPC Land Resources Division (LRD), the Ministry of Agriculture and Food, Forests, and Fisheries (MAFFF) and the Ministry of Land Survey, and Natural Resources (MLSNR).</p> <p>The main objective of this project will be to strengthen the resilience of communities by enhancing land tenure systems, improving forest management, and piloting an integrated agro-ecosystem approach to rehabilitate degraded landscapes. It will provide assistances on the followings key components: i). Development of legal and policy frameworks to support integrated land and agro-ecosystem management ii) Development and implementation of integrated agro-ecosystem management systems in pilot areas iii) Mainstreaming sustainable forest management and iv) Dissemination of best practices and lessons learned, monitoring and evaluation.</p> <p>FAO in collaboration with the Government of Tonga will set up a Project Management Unit within MAFFF and will recruit a Project team, international and national constants (long and short term appointments) to co-ordinate and support project implementation.</p>
Description of task(s) and objectives to be achieved (per mission if applicable)	<p>Under the overall guidance of the FAO Subregional Coordinator (SRC) for the Pacific, and working closely with the LTO, NPC, FAO-GEF Coordination Unit (TCID), FAO officers at Headquarters, the Regional and Sub-regional office and relevant ministries. The Field Project Officers (FPOs) will perform the following tasks:</p>

Under the overall guidance of the FAO Subregional representative for the Pacific (SRC), the technical supervision of the Lead Technical Officer, NPD, the national project manager will be responsible for the followings tasks;

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Key competencies/qualifications

- University Degree in Economics, Business Administration, or related fields.
- Five years of experience in project finance and procurement.
- Knowledge of FAO's project management systems.

Key performance indicators

<i>Expected Outputs (per mission if applicable):</i>	<i>Required Completion Date:</i>
•	End of project