United Nations Development Programme
Country: Tuvalu
PROJECT DOCUMENT[1]

Project Title: Effective and responsive island-level governance to secure and diversify climate resilient marine-based coastal livelihoods and enhance climate hazard response capacity

UNDAF Outcome(s): Environmental Management, Climate Change and Disaster Risk Management

UNDP Environment and Sustainable Development Primary Corporate Outcome:

- Development plans and programmes integrate environmentally sustainable solutions in a manner that promotes poverty reduction, MDG achievement and low-emission climate-resilient development

UNDP Secondary Corporate Outcome:

- National and local governments and communities have the capacities to adapt to climate change and make inclusive and sustainable environment & energy decisions benefitting in particular under-served populations

Expected Country Programme Outcome:

- Sub-Regional Programme Outcome 4 (UNDAF Outcome 1.1): Improved resilience of PICTs, with particular focus on communities, through integrated implementation of sustainable environment management, climate change adaptation/mitigation and disaster risk management
- Sub-Regional Programme Outcome 2 (UNDAF Outcome 5.1): Regional, national, local and traditional governance systems are strengthened, respecting and upholding human rights, especially women's rights in line with international standards.

Executing Entity/Implementing Partner: Department of the Environment, Ministry of Foreign Affairs, Environment, Trade, Labour and Tourism

Implementing Entity/Responsible Partners: Ministry of Natural Resources (Department of Fisheries); Ministry of Home Affairs and Rural Development (Department of Rural Development).

Programme Period:	4 years
Atlas Award ID:	00073054
Project ID:	00086021
PIMS #	4571
Start date:	June 2013
End Date	June 2017
Management Arrangements	NIM
PAC Meeting Date	12 February 2013

Total resources required:	$24,038,880
Total allocated resources:	$24,038,880
• LDCF (GEF):	$4,200,000
• Co-financing:	
○ Government in cash	$62,176
○ Government parallel	$14,267,842
○ FTF parallel	$1,243,524
○ Tuvalu Red Cross parallel	$207,500
○ NZAP parallel	$1,000,000
○ SPC parallel	$1,979,460
○ UNDP parallel	$911,190
○ Government in-kind	$167,188

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

Agreed by (Government): 30.8.13

Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

Date/Month/Year

Agreed by (UNDP): Date/Month/Year

30/08/13

Date/Month/Year

Brief Description

Tuvalu is one of the most vulnerable countries in the world to the impacts of climate change, perhaps even the most vulnerable. Tuvalu's atolls are extremely exposed to projected sea-level rise, increases in the severity of cyclones, increases in ocean temperatures and ocean acidification. When combined with considerable development challenges, a narrow resource base economy and chronic capacity constraints, the extremely high levels of vulnerability are likely to have severe long term effects on sustainable development and achievement of the MDGs.

The Government of Tuvalu understands, on behalf of all Tuvaluans, the urgency of addressing its priority development challenges related to adapting to future impacts of climate change. This project will focus on implementing three such priorities outlined in its NAPA, namely "strengthening of community based conservation programmes on highly vulnerable near-shore marine ecosystems," "adaptation to near-shore coastal shellfish fisheries resources and coral reef ecosystem productivity," and "strengthening community disaster preparedness and response potential." These priorities will be addressed through the following interlinked Components:

Component 1 includes activities for building resilience in marine-based livelihoods to climate impacts through an integrated package of measures that seek to enhance traditional fishing practices and food preservation techniques, facilitate a shift in fishing practices from vulnerable reef resources to more resilient pelagic resources, and strengthen community management of reef resources. These adaptation measures will be supported by targeted education, awareness raising and information exchange.

Component 2: Disaster risk management will focus on improving access to disaster early warning systems for people on outer islands. This will include establishing multiple communication channels, both at the national and outer island levels, to ensure reliable communications in the face of intensifying cyclone events in a changing climate, and building community capacity to take advantage of the improved communication systems.

Component 3 will focus on integrating locally-specific climate change concerns into existing outer Island Strategic Plans and building capacities of outer island administrations and communities to identify, budget, execute and monitor adaptation investments that are financed by domestic and external resources. This will be supplemented by enhanced awareness among the central government agencies about their existing domestic expenditures on climate sensitive sectors and the adaptation gaps. It is expected that enhanced capacity to guide the future adaptation financing at the outer island level using the climate-smart Island Strategic Plans and to identify gaps and potential adaptation financing at the national level will enable the Government of Tuvalu to effectively combine and sequence available resources to reduce the vulnerability of the country to the impacts of climate change.

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List of Acronyms

ALM	Adaptation Learning Mechanism
APR	Annual Project Report
AusAID	Australian Agency for International Development
AWP	Annual Work Plan
CAE	Country Assistance Evaluation
CFC	Community Fishing Center
CBOs	Community-Based Organizations
CDMP	Comprehensive Disaster Management Program
CFC	Community Fishing Centres
CIP	Capital Investment Plan
CLGF	Commonwealth Local Governance Forum
CO	Country Office
CSOs	Civil Society Organizations
DoE	Department of Environment (Ministry of Ministry of Foreign Affairs, Environment, Trade, Labour and Tourism)
DoF	Department of Fisheries
DMO	Disaster Management Office
DRD	Department of Rural Development
EA	Executing Agency
EU	European Union
FA	Falekaupule Act (1997)
FAD	Fish Aggregating Device
FTF	Falekaupule Trust Fund
GEF	Global Environment Facility
GOT	Government of Tuvalu
IA	Implementing Agency
IDC	Island Disaster Committee
INC	Initial National Communication
IPCC	Inter-governmental Panel on Climate Change
ISP	Island Strategic Plan
JICA	Japan International Cooperation Agency
LDCF	Least Developed Country Fund
LDCs	Least Developed Countries
LMMA	(Locally) Marine Managed Area
M&E	Monitoring & Evaluation
MDG	Millennium Development Goal
MHARD	Ministry of Home Affairs and Rural Development
NDMA	National Disaster Risk Management Arrangement
MMA	Marine Managed Area
MPA	Marine Protected Area
NBSAP	National Report on National Biodiversity Strategy and Action Plan
MWCT	Ministry of Works Communications and Transport
NAPA	National Adaptation Program of Action
NDMP	National Disaster Management Plan
NGOs	Non-Governmental Organizations
PEQD	Pacific Equatorial Divergence
PIR	Project Implementation Review
PCCSP	Pacific Climate Change Science Programme (of the Australian Government)
PPG	Project Preparation Grant
RCU	Regional Coordinating Unit
SDE	Special Development Expenditure
SGP	Small Grants Program

SLG	Support to Local Governance (Programme)
SNAP	Tuvalu's National Strategic Action Plan for Climate Change and Disaster Risk Management
SNC	Second National Communication
SPC	Secretariat of the Pacific Communities
SST	Sea surface temperature
TANGO	Tuvalu Association of Non Government Organisations
TKII	Te Kakeega II
TMD	Tuvalu Media Department
TNCW	Tuvalu National Council of Women
TPR	Tripartite Review
TTPR	Terminal Tripartite Review
TuCAN	Tuvalu Climate Action Network
UNDP	United National Development Program
UNFCCC	United Nations Framework Convention on Climate Change
USP	University of the South Pacific
WB	World Bank

List of Annexes

1 SITUATION ANALYSIS

Tuvalu is the fourth smallest nation in the world with a landmass of 25.9km^2 and 9,561 people[2] scattered across nine inhabited islands spread across the central Pacific from 6° to 10° south, as the southern most islands of the Gilbert-Ellis chain. The country's exclusive economic zone covers 900,000 km^2. Funafuti atoll, where the national capital is located, is home to about half of the population. The islands consist of 5 coralline atolls (Nanumea, Nui, Nukufetau, Funafuti, Nukulaelae), and 3 table reef islands (Nanumaga, Niutao, Niulakita) with 1 composite (coralline atoll/table reef) island (Vaitupu).

Distance from international markets, remoteness of nine islands that consist the country, the size of the country and economy which is extremely vulnerable to external shocks, and limited natural resource base all contribute to the development challenges in the country. Much of the government revenues are derived from fishing license fees from foreign fishing vessels, 'dotTV' internet domain, and income from the Tuvalu Trust Fund. The impact of global economic crisis has been significant as the income earning from the Tuvalu Trust Fund and the demand from Europe for Tuvalu's seafarers – Tuvalu's main foreign exchange earning source for the private sector – has dwindled (IMF, 2011). As a result, it is estimated that the GDP growth in 2009 and 2010 was no more than 1.0%. Remoteness to markets internationally and domestically inevitably leads to heavy dependence on subsistence for main livelihoods, exploiting extremely poor soils and/or abundant marine resources. All these factors contribute to, amongst other things, persistent level of poverty, and the most recent MDG assessment report from 2010 demonstrates an increase in poverty level and Tuvalu is currently unlikely to achieve the MDG 1 target[3]. The level of inequality, as measured by gini co-efficient, also shows an increase in recent years.

Under the challenging circumstances that Tuvalu is in, strengthened local (i.e. outer island) governance and improved service delivery is a precondition for achieving equitable and sustainable economic growth as laid out in the national development strategy – Te Kakeega II. With assistance from bilateral donors and multilateral development agencies, Tuvalu has embarked on efforts to place greater emphasis on a participatory process for identifying locally specific development needs while enhancing the capacity of the central government to respond to such needs. Among other areas, such an approach is critical in supporting subsistence-based livelihoods given the intimate correlation between sustainable livelihood opportunities and the achievement of the MDGs.

The viability of subsistence-based livelihoods in Tuvalu is likely to be undermined significantly due to climate change. The available climate science indicates a major shift in marine ecosystems, on which Tuvaluans' livelihoods heavily depend, and an increase in intensity of tropical cyclones, which have been an important factor historically that has caused significant damages to infrastructure and livelihood assets and setbacks to development gains.

1.1 Climate change - induced problem

A robust assessment of potential climate changes in Tuvalu has recently been undertaken through the Pacific Climate Change Science Programme (PCCSP), led by the Australian Government in collaboration with the regional meteorological services including the Tuvalu Meteorological Service. In addition, a climate vulnerability analysis specifically on the fisheries sector has been undertaken by the Tuvalu Department of Fisheries, with support from the Secretariat of the Pacific Community (SPC). Combined, these two studies provide a comprehensive evidence base for potential atmospheric and oceanic responses to climate change. A summary of projected changes to the surface climate (mean annual air temperature, rainfall, and cyclonicity) for the years 2035 and 2100 using IPCC B1 (low) and A2 (high) emission scenarios is shown in Figure 1. The green and blue boxes in Figure 1 (and Figure 2) illustrate the level of Likelihood and Confidence, based on IPCC terminology.

[2] Tuvalu 2002 Census

[3] The national level baseline for poverty as of 1998 was recorded as 23.2%; 16.5% in 2004; and 19.7% in 2010.

Climate feature[a]	1980–1999 average	Projected change			
		B1 2035	A2 2035	B1 2100*	A2 2100
Air temperature (°C)	28.2 (Funafuti)	+0.5 to +1.0	+0.5 to +1.0	+1.0 to +1.5	+2.5 to +3.0
Rainfall (mm)	3666 (Funafuti)	+5 to +15%	+5 to +20%	+10 to +20%	+10 to +20%
		More extreme wet and dry periods			
Cyclones (no. per year)	0.8	➢ Total number of tropical cyclones may decrease ➢ Cyclones are likely to be more intense			

* Approximates A2 in 2050; a = for more detailed projections of rainfall, air temperature and cyclones in the vicinity of Tuvalu, see www.cawcr.gov.au/projects/PCCSP.

Figure 1 Projected changes to surface climate of Tuvalu (SPC, 2012 based on PCCSP, 2011)

Ocean feature	1980–1999 average	Projected change			
		B1 2035	A2 2035	B1 2100*	A2 2100
Sea surface temperature (°C)	29.4[a]	+0.6 to +0.8	+0.7 to +0.8	+1.2 to +1.6	+2.2 to +2.7
Sea level (cm)	+6 since 1960				
IPCC **		+8	+8	+18 to +38	+23 to +51
Empirical models ***		+20 to +30	+20 to +30	+70 to +110	+90 to +140
Ocean pH (units)	8.08	-0.1	-0.1	-0.2	-0.3
Currents	Increase in South Pacific gyre	SEC decreases at equator; EUC becomes shallower; SECC decreases and retracts westward			
Nutrient supply	Decreased slightly	Decrease due to increased stratification and shallower mixed layer			< -20%

* Approximates A2 in 2050; ** projections from the IPCC-AR4; *** projections from recent empirical models {Chapter 3, Section 3.3.8}; a = average for EEZ derived from the HadISST dataset; SEC = South Equatorial Current; EUC = Equatorial Undercurrent; SECC = South Equatorial Counter Current.

Figure 2 Projected changes to the ocean resulting from climate change (SPC, 2012)

The SPC study on the fisheries sector predicts significant changes to Tuvaluan waters as a result of climate change, including increases in sea surface temperature (SST), sea level and ocean acidification. Changes to ocean currents, such as the South Equatorial Current, and the area and location of the Pacific Equatorial Divergence (PEQD) Province are also expected (SPC 2012). These are summarised in Figure 2.

The SPC analysis clearly demonstrates the critical vulnerability of Tuvalu's nearshore marine habitats resulting in declines in the quality and area of all habitats (see Annex 2). Finally, the SPC analysis concluded that demersal[4] fish and intertidal[5] and subtidal[6] invertebrates in Tuvalu are projected to show progressive declines in productivity due to both the direct effects (e.g. increased SST) and indirect effects (changes to fish habitats) of climate change. While much more research is needed, there is also growing evidence that ocean acidification (i.e. decrease in the ocean pH level) also impacts negatively the productivity of marine taxa, especially invertebrates and shellfish (see for example Guinotte & Fabry, 2008), which constitute an important part of food intake for Tuvaluans (see below). On the other hand, the nearshore pelagic fishery[7] component of coastal fisheries in Tuvalu is projected to increase in productivity due to the redistribution of tuna to the eastern Pacific. In summary, the overall projected change to coastal fisheries catch in Tuvalu under a climate change regime indicates a significant decline of demersal fish availability balanced by projected increase in productivity of nearshore pelagic fish. This is reflected in the prediction by SPC that total catches from coastal fisheries in Tuvalu are projected to *increase* slightly under both scenarios up to 2035. However, this result is based on the assumption that local fisherman can benefit from increasing productivity in nearshore pelagic fisheries immediately to compensate the likely loss from the demersal fish catch – a somewhat unrealistic assumption given how the marine-based livelihood skills have been developed for centuries specifically tailored to the demersal fisheries. Moreover, the continuing climate change trend would eventually lead to declining fisheries productivity, in both demersal and nearshore pelagic fisheries, under both scenarios in 2100, particularly under A2 in 2100. In addition to the direct impact of climate change on productivity of fisheries resources, sea temperature increases and acidification associated with climate change are expected to lead to coral bleaching and decline in reefs, which lead to weakening of habitats for reef and coastal fish. These phenomena occur when the thermal tolerance of corals and their photosynthetic symbionts is exceeded. Mass coral bleaching has occurred in association with episodes of elevated sea temperatures over the past 20 years and has resulted in significant losses of live coral in many parts of the world. Most information suggests that the capacity for acclimation by corals has already been exceeded, and that adaptation will be too slow to avert a decline in the quality of the world's reefs (Hoegh-Guldberg, 1999). This is expected to negatively affect tropical marine ecosystems, including fisheries productivity. These conclusions have important implications for the design of the proposed LDCF Project. That is, while the overall impact of climate change in fisheries in general may increase the total catch in the short-term, this change is predicted to involve significant reallocations of marine resources (from reef and coastal intertidal, sub-tidal or demersal fisheries to near-shore pelagic fisheries). Tuvaluan communities will, as a result, require additional support (financially and technically) to make the shift in fishing patterns. A critical component of this project is to assist Outer Island communities with such adaptations.

Climate change induced extreme events will likely have direct impacts on lives and livelihoods. Cyclones have, in the past, resulted in evacuation of families, considerable damage to infrastructure and the destruction of livelihood assets. The two largest cyclones that devastated Tuvalu in the last four decades provides a glimpse of what the country will face more of under a changing climate. The 1972 Cyclone Bebe and 1997 Cyclone Keli destroyed 97% and 100% of houses on the most affected islands, Funafuti

[4] Demersal fish species are those that live and feed near the sea floor and may be site-attached or hold territories (in contrast to pelagic species)
[5] Intertidal fisheries are those located between high and low water marks
[6] Sub-tidal fisheries are those located below low water mark
[7] Near-shore pelagic fisheries are fish species located in the water not close to the bottom or near the shoreline. These are open sea or oceanic fishes, though some species can also be found in the lagoons, they are very mobile, not site attached and do not hold territories.

and Niulakita respectively. These large-scale disasters along with many more, smaller scale hydro-meteorological events have caused significant material/infrastructural damages to the livelihood foundations of the community. Thirty three percent of those people responding to questions on their experiences with damage to fishing equipment said that they had sustained losses from cyclones and storms in the past (Annex 5). The Pacific Catastrophe Risk Assessment and Financing Initiative Country Risk Profile: Tuvalu (2011) is shown in Annex 3. The Risk Profile concludes that based on historical data (and in the absence of climate change) tropical cyclones will potentially cause annual impacts of 0.2% of GDP and that cyclones with a 40% chance of occurring in the next fifty years (100-year mean return period) could cause damages of 4.4% of GDP.

The PCCSP study recently concluded that in the Tuvalu region, climate change projections suggest a decrease in the number of tropical cyclones by the late 21st century but an increase in the proportion of more intense storms. The future projections of fewer but more intense cyclones are likely to have significant implications on future damages in terms of human lives, infrastructure and livelihood assets as a research indicates that globally 10% of intense tropical cyclones are presently responsible for 93% of damages (Mendelsohn et al., 2012). The combination of these two factors – increased intensity of tropical cyclones with decreased frequency – has been fundamental to the design of the proposed LDCF project which includes activities to enhance the Country's warning systems to increase the preparedness for increased cyclone intensity, while also stressing the need for on-going education and community awareness-raising activities to ensure that knowledge and experience is not lost between less frequent, more intense events.

In summary, most recently available scientific projections, downscaled at the national level, indicate the following changes in the natural environments in Tuvalu:

- Increasing SST and ocean acidification will negatively affect the productivity of marine resources, both directly and indirectly.
- Increasing intensity of tropical cyclones is likely to contribute further to destruction of marine habitats especially in shallow areas
- Increasing intensity of tropical cyclones will cause human and material losses
- Decreased frequency of tropical cyclones will require enhanced long-term awareness raising and knowledge sharing activities.

The two studies referred to in this section are provided in Annex 1 and 2. As the following section will demonstrate, there are three key underlying causes which further influence the climate induced problems.

1.2 Underlying causes

The impacts of the climate change projections presented above will interact with the underlying causes of the problem, which are inherently climate and non-climate related. These causes presented below, inherently interconnected with one another, and in combination provide significant development challenge for Tuvalu. The analysis presented below follows an analytical framework developed by UNDP – "Designing climate change adaptation initiatives (2010)".

These underlying causes can be largely classified into three interrelated categories: the marine resource dependence of outer island communities; the small size and remoteness of Tuvalu as a whole – and particularly its outer islands; and the extreme physical exposure and sensitivity of Tuvalu's atolls. Each of these categories is described in turn below.

Marine Resource Dependence

Tuvalu's high dependence on subsistence food production is a critical dimension to prevailing poverty and vulnerability to climate change. Even within the Pacific context, the level of contribution of subsistence food production in Tuvalu is higher than many other neighboring countries: It is estimated that the subsistence food production as percentage of household income for Tuvalu is 55% whereas that for

Samoa, Kiribati, Tonga, Solomon Islands, and Palau ranges between 3-37%[8]. Household surveys administered by SPC/SOPAC in 2004-2005 revealed Tuvalu's significant dependence on marine resources: national average consumption of fish is nearly 98.4kg/capita/year compared to the regional average of less than 50kg; and some outer islands had average consumption of over 150kg of fish.

Marine resources are an important source of livelihoods and source of protein for Tuvaluans. 90% of households in Tuvalu engage in subsistence harvesting of marine resources as an important part of their food source. The SPC estimates that fish provides more than 75% of dietary animal protein in Tuvalu, well above the regional average. Most Tuvaluan households engage in household-level fishing and collection activity to supplement their diet, and near-shore fishing is the main source of fish catch. It is supplemented by collection of marine resources especially shellfish and invertebrates. The physiographical feature of the island determines, to a large extent, the extent of marine resource collection. Collecting marine resources occurs on all of Tuvalu's islands, but presents the greatest opportunities in Funafuti, Nanumea, Nui, Nukufetau, Nukulaelae and Vaitupu which have central lagoons which connect with the outer ocean. These lagoons provide safe havens for marine resource collection. In these islands, marine resource collection is an important livelihood activity for women and the elderly.

Marine resources in Tuvalu, both near-shore and in lagoons, are declining due to combined factors of anthropogenic reasons and more recently climate change. Overfishing/exploitation is considered to be one of the key contributing factors to the declining viability of the marine resource-based economy. Economic growth over the past decades has provided access to powered boats for some fishers and they are thought to be one of the important reasons for overfishing and destruction of marine habitats. In recent years where fuel prices are increasing, those fishers with motored boats need to catch larger volume of fish in order to cover the fuel costs. Future and current climate change is likely to compound with these anthropogenic factors. Coral reefs that harbor near-shore fish and shellfish resources are already in critical danger as the present sea surface temperature of Tuvalu is around 29°C (+/-0.5°C with seasonal variation) which is already touching the upper limit of the tolerance range for most coral species (25-29°C). The SPC climate change study referred to above indicates that in Tuvalu, 25-65% of coral cover is likely to be lost by 2035 under both B1 and A2 scenario and up to 75% by 2100.

Geographical characteristics

Tuvalu is one of the smallest and most remote counties in the world. Its 9,561 inhabitants live in atolls - covering a total of only 25.9 km^2 of land area – are spread across the central Pacific from 6° to 10° south, as the southernmost islands of the Gilbert-Ellis chain.

The remoteness of Tuvalu is reflected in the capital atoll, Funafuti, which is the only island connected by air transport to another country, Fiji, with two international flights per week. The two flights provide approximately 50 passenger seats per week. As such, the great majority of goods and equipment travel to Tuvalu by boat which results in the country being vulnerable to the impact of global externalities – notably oil price increases and the rising cost of transport and food.

The remoteness of Tuvalu as a whole is further compounded by the distances between the capital atoll and its outer islands (see Figure 3). The northernmost island of Nanumea is 464 km away from Funafuti. There is no internal air service between atolls with inter-island transport served by government ferries only[9].

Outer island remoteness, and the small overall size of Tuvalu's population and physical size, has critical development implications. Extreme outer island isolation results in limited opportunities for viable economic activities. For example, exporting fisheries products from outer islands is hardly done due to extreme distance to markets. At the same time, access to alterative livelihoods for outer island communities is limited due to limited inflow of outside information and materials.

[8] Extracted from a paper prepared for Pacific Islands Ministers of Agriculture and Fisheries Meeting, 2008. Presented by the SPC.

[9] See Annex 17 for further details of distances and transport challenges between the outer islands.

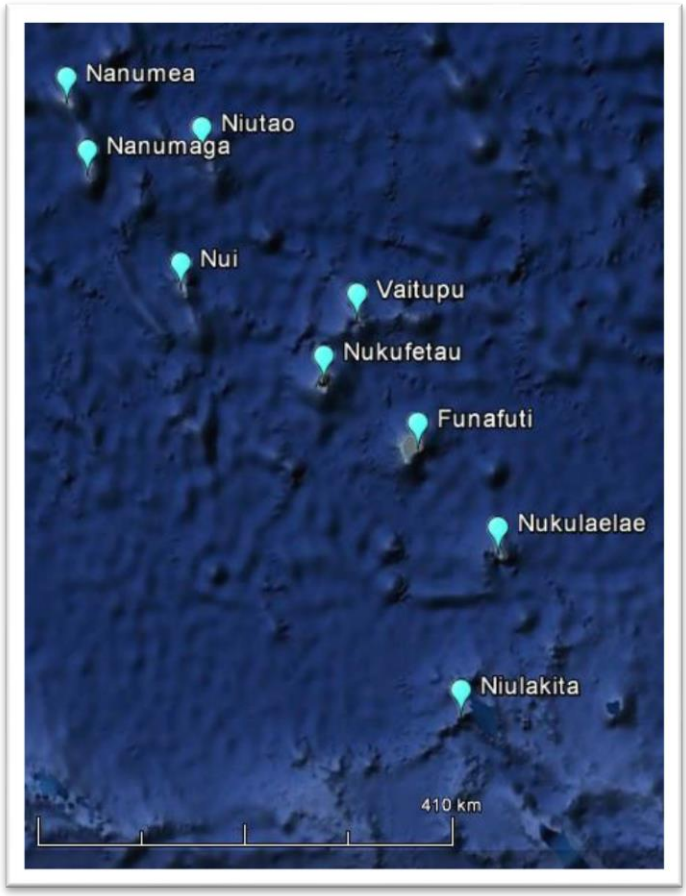

Figure 3 ***Map of Tuvalu showing arrangement of islands (source: Google Earth)***

Remoteness also provides significant communication challenges, especially in the wake of disaster to increase preparedness and after disaster for early response. As it has been observed in the past, early response after a weather-related disaster can be carried out only by helicopters due to disruptions of maritime travel.

In general, remoteness brings challenges in providing effective development assistance. Because of limited logistical options and financial resources, majority of development assistance inevitably concentrates only on the capital island of Funafuti. If donor programmes do work in outer islands, operations are often fraught with delays, eventual scale-down or even cancellation because of limited options of visiting the islands.

The economy of Tuvalu, like its size and population, is also small. There are limited export options from its resource base, and income is derived from a few sources including tuna fishing licenses, remittances, the 'dotTV' internet domain, and surpluses from the Tuvalu Trust Fund. The 2011 GDP was AU$35.7m[10]. This small, narrow economic base has proved highly variable in recent years through the Global Financial Crisis, with the result of significant fiscal imbalance in recent years. It is estimated that the long-term per-capita GDP growth since 2001 was no more than 1.0%[11]. The IMF is projecting a real GDP growth of 1.2% and 1.3% for 2013 and 2014 respectively[12].

Employment opportunities in Tuvalu are dominated by the public sector (approximately 2/3 of all those employed) with limited opportunities in Tuvalu's private sector. The main source of private sector employment is through foreign Tuvaluan seafarers (between 10-15% of employed Tuvaluans) working overseas, particularly in Europe. However, this source of income has also been impacted in recent years[13] as a result of global economic factors. There are high unemployment levels, with particularly high levels among youth[14] that, as outlined above, provide an impetus for youth to leave the outer islands in search of work in Funafuti or overseas.

All of these factors are thought to attribute to the increasing level of poverty as well as increasing inequality within the country as shown in the latest MDG country report. In turn, as described in detail in the following sections, they constituted an important element of the design principles for the proposed LDCF project.

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[10] Tuvalu: Economic Data Summary www.adb.org/sites/default/files/ki/2012/pdf/TUV.pdf
[11] Preliminary Analysis of Hardship and Poverty (Tuvalu Household Income and Expenditure Survey, 2010)
[12] Tuvalu and the IMF: http://www.imf.org/external/country/tuv/index.htm?type=9998
[13] IMF (2011) Economic Health Check Surveillance Brings Tuvalu Closer To International Fold http://www.imf.org/external/pubs/ft/survey/so/2011/car051011a.htm
[14] UNFPA: *countryoffice.unfpa.org/filemanager/files/pacific/cp11.pdf*

Physical exposure and sensitivity

The low-lying islands of Tuvalu rarely exceed three meters above mean sea level. The highest point across all islands is only 4.5m[15]. The islands consist of 5 coralline atolls (Nanumea, Nui, Nukufetau, Funafuti, Nukulaelae), and 3 table reef islands (Nanumaga, Niutao, Niulakita) with 1 composite (coralline atoll/table reef) island (Vaitupu).

All atolls have very poor soil conditions that can support limited agricultural products such as coconuts, pulaka (similar to taro), breadfruit and pandanus. This places increased pressure on marine resources as a food source for outer island communities. As demonstrated in this Proposal, inter-tidal and nearshore resources are extremely sensitive to environmental change from a range of climate- and non-climate driven factors, including overfishing, destruction of marine habitats from powered boats and increased ocean temperatures and acidification. This demonstrates that the subsistence-based livelihoods in Tuvalu, especially in outer islands, are supported by highly fragile, sensitive natural systems that exist on the fine physical/environmental balance between its marine resource regeneration capacity and resource exploitation; between their exposure to erosive open-ocean conditions and the generation of sediment through natural production with reef systems, given that there are no sources of sediment from rivers; and between the level of evapotranspiration from the shallow soil and annual precipitation. These characteristics that are inherent in Tuvalu are highly vulnerable to external shocks and changes in the climate system will amplify the underlying development challenges that Tuvalu faces.

Moreover, Tuvalu's extreme exposure makes it highly vulnerable to extreme weather events, most importantly tropical cyclones. The atolls are sensitive to both cyclonic wind damage and from flooding due to storm surge on the low-lying islands. Significant structural damage has been experienced in Tuvalu in cyclone Bebe in 1972 and Cyclone Keli in 1997 that highlighted this exposure and demonstrated the need for greater emphasis on disaster risk reduction initiatives.

The physical exposure of Tuvalu to cyclones is exacerbated by poor communication systems. This leaves outer islanders in particularly incredibly exposed to cyclones in that warnings of impending events may not be received in time – if at all – that would have enabled communities to better prepare. Improving and enhance the resilience of these warning systems is an integral component of the proposed project.

The physical exposure and sensitivity of Tuvalu's islands, and the communities that live there, when compounded by their remoteness and small, narrow resource base is in-turn exacerbated by extreme dependence on marine resources. These interacting, mutually reinforcing root causes of the problem – when enhanced by projected future climate change (Section 1.1) provide the drivers for the design of the proposed LDCF project.

1.3 Long-term solution and barriers to achieving the solution

1.3.1 Long-term solution

The key to sustainable and climate-resilient development in Tuvalu, as described in TK-II as a "healthier, more educated, peaceful and prosperous Tuvalu," is strengthened outer island administrations (i.e. Kaupules) which are capable of identifying locally-specific development and adaptation needs and in turn acting as a conduit for both technical assistance from the central government and development/climate finance. Given the continuous capacity constraints at the central level and logistical challenges, it is crucial that the paternalistic development mind-sets, in which outer island communities anticipate that their development needs are fulfilled by the central government in entirety, gradually shift towards the one that participatory in their planning and execution, a mind-set in which outer island communities provide guidance to the central government *what* and *how much* is needed. The Falekaupule Act of 1997 which devolves financial and development planning authority to Kaupules exemplifies such a shift. With support from donors, especially UNDP and Commonwealth Local Governance Forum, the critical elements of

[15] Tuvalu National Adaptation Programme of Action

foundation for participatory development planning process have been put in place. They include the Island Strategic Plans through which they identify locally-specific development priorities, and two financial mechanisms – Special Development Expenditures and Falekaupule Trust Fund – which are used to meet such development priorities. This process needs to be strengthened with sufficient, expanded capacities both at the central and local levels to identify additional risks imposed by climate change with local knowledge adequately reflected in this process and to execute development (and adaptation) priority actions either by island community themselves or with technical support from the central government. This in turn requires that island communities and government staff are exposed to various adaptation options that are available in the region or globally, including livelihood resilience building measures, engineering measures to protect physical assets, and behavioural changes that are required to accommodate the climate-induced changes in the surrounding physical and environmental settings.

As a small island developing state, which comprises of many small outer islands, a certain level of physical exposure to extreme weather events is unavoidable. In light of this, the only pathway to a sustainable, climate-resilient Tuvalu is to increase the *preparedness* of Tuvalu, especially in outer islands, to such events. The most fundamental prerequisite to enhanced preparedness is access to information and awareness. Outer island communities need to be provided with timely and accurate information of imminent hydro-meteorological risks. Once such information is received, all community members need to react appropriately based on the nature of the information, e.g., no fishing activity, stay indoors, evacuate to designated evacuation site, etc. At the central level, coordination arrangements and protocols need to be set up so that the early warning information, which is most likely generated outside Tuvalu, is relayed to outer islands with minimum delays. In Tuvalu, it is almost inevitable, given the future projected increase in intensity of tropical cyclones, that there will be occasions in the future where helicopters need to fly to affected outer islands for early response. However, with robust communication networks, potential damages can be minimized and the level of damages can be reported in real time so that early response efforts can be made more effective and efficient.

Tuvalu is likely to see an increasing amount of financial assistance aimed at building climate resilience. Not only is it critical to enhance the capacity in outer islands to identify priority adaptation actions, also central government agencies need to be fully aware of their existing level of expenditure on climate-sensitive sectors and gaps that still need to be filled with future influx of climate financing. This heightened awareness at the central level needs to be built not only within the overall context of the achievement of their national development plan – TK-II, but also in alignment with the sub-national development planning and budgeting process – ISP process – so that the gaps identified for building resilience in Tuvalu are supported both by their national strategy and island-specific strategies.

1.3.2 Barriers to achieving the solution

Knowledge of and access to resilient marine-based livelihood options

There is a significant knowledge gap with regards to realistic measures which outer island communities can implement to increase the resilience of marine-based livelihoods. In the past, several options of aquaculture and mariculture have been tested with support from donors but they are only on a small scale with varying degrees of success (See Annex 11B for an assessment of past initiatives in Tuvalu and in the Pacific). Moreover, the past initiatives are often designed with a view to strengthen the economic viability of fishing activities rather than supporting the resilience of natural ecosystem. This orientation resulted in heavy capital investments and introduction of alien species which did not receive sufficient ownership by local communities and eventually did not achieve sustainability of results. As a result, the most common counter-response to declining productivity of marine resources is simply reducing the fish/shellfish intake of the particular species, and compensating the decline by overfishing others, with little consideration for the overall stock of marine resources. The proposed LDCF project will address this barrier primarily through Outputs 1.1 and 1.2. Given the lessons learned from past initiatives, significant emphases are placed on building the resilience of natural ecosystem and bolstering techniques and knowledge that are already available within island communities while taking into considerations future climate change impacts on fisheries resources. Specific data collection measures that will be put in place

under Output 1.2 will directly feed into the regional database managed by the SPC. This will contribute to enhancing the understanding of the impact of climate stimuli on highly intricate marine resources, which will in turn promote development of effective adaptive measures in the long run.

Awareness about climate risks and response measures

Although the level of general awareness among Tuvaluans about climate change and potential impacts, such awareness is usually linked only with dramatic existential crisis that climate change will bring about to Tuvalu, and when it comes to impacts of climate change on various aspects of their lives, such as livelihoods and disasters, there is highly limited knowledge about specific measures people can employ to increase the resilience or reduce vulnerability. The ongoing first LDCF project, which is the first climate change adaptation project in Tuvalu that contains on-the-ground activities in outer islands, is expected to be contributing to increased awareness about resilience-building measures. They are also planning to undertake an island level, participatory vulnerability assessment in 2013 which is expected to further enhance awareness of island communities about specific climate risks and counter-measures to build resilience. In remote island settings, where accessibility of information acts as a significant constraint to building resilience, an important first step is to provide community members with knowledge about a range of practical options that are suitable in their unique circumstances. At the moment, the first LDCF project is practically the only window through which community members can get a sense of what adaptation options for their island may be, and this window needs to be continuously be widened through similar hands-on adaptation projects. This barrier will be addressed primarily through Outputs 1.3 and 2.1, but strongly supplemented by Outputs 1.2 and 3.1. Under Outputs 1.3 and 2.1, specific lessons learned from adaptation measures related to marine-based livelihoods and enhancing responsiveness to hydro-meteorological risks will be shared across all island communities. It is important to highlight that cross-knowledge sharing across islands is given an equal, if not more, emphasis in the project design especially under Output 1.3. The underlying assumption is that by observing what other outer islands do to tailor make specific adaptation options, others will expand their knowledge base. The available projection of future cyclonic events, i.e. reduced frequency but increased intensity, makes continuous awareness raising all the more important. Hence, Output 2.1 will, among other things, institutionalize the awareness raising activities in a formal school curriculum so that children are exposed to the idea of disaster preparedness in early age and become the champion within the household to disseminate the information. Mock drills and annual events envisaged under these Outputs will not only provide opportunities to demonstrate, share and learn climate risks and adaptation measures, they will be done at a nation-wide scale as part of either National Disaster Risk Reduction Day or Tuvalu Day so that they feel part of an important initiative for the country.

Limited infrastructure for timely and accurate dissemination of imminent hydro-meteorological risks

At present, the ability to provide information on climate risks, is hampered by the lack of reliable communication systems enabling effective early response[16]. The lacks of reliable communication facilities not only has an implication on risks on human lives, but also on critical livelihood assets, which once destroyed have significant human development impacts. Table 1 shows the channels through which early warning information is currently disseminated to households in outer islands. Four actors (Meteorology Department, Disaster Management Office (DMO), Island Disaster Committees (IDCs) and Tuvalu Media Department (TMD)) are presently engaged in information dissemination, and this and the channels through which information is disseminated, pose a significant challenge in swift dissemination of information. In addition, the current system relies on highly vulnerable modes of communication that has proven their susceptibility to poor weather conditions and maintenance challenges in an extremely corrosive and hostile tropical marine environment.

Table 1 Current which early warning information disseminated to outer islands households

[16] SOPAC. 2005. Baseline survey of hazard warning and disaster response systems for Pacific Island States.

	Information dissemination route	Process/Mechanism	Issues/Barriers
1	Meteorology Department → DMO	Early warning information on hydro-meteorological hazards is issued from the Nadi or Hawaii Forecasting Centers. Based on this information, and according to the National Disaster Plan, the information is shared from Met to DMO (usually by phone)	Due to physical proximity of these two actors, the dissemination of information at this level is swift and poses no issues during normal working hours, but there are some problems outside normal working hours contacting the relevant people.
2	DMO → Island Disaster Committees & Tuvalu Media Department (TMD)	[Funafuti] DMO communicates with Police and Funafuti's IDC through phone and FAX. At the same time, TMD is also informed for disseminating information through AM radio. [Other outer islands] To those outer islands equipped with a telephone line, DMO disseminates info to IDCs through phone/fax. To those without a telephone line, satellite phone is used. Information is also sent from TMD through HF to three islands where there are meteorological stations.	The landline and satellite phone have been unreliable due to power supply problems and the fact that the satellite phones are not on all the time and unusable inside a building during severe weather conditions. There is a high likelihood that the electricity in Funafuti will be shut down which prevents transmission of AM radio to outer islands. Radio transmitter is located only in Tuvalu Radio, away from Emergency Operation Centre.
3	Island Disaster Committees → Communities	IDCs use traditional methods – e.g. word-of-mouth, hand-held speakerphones, etc – to alert village communities once a warning is received on the island. This method has proven effective over the years – but assumes that a warning is received at the island. Independently, if radio is under operation, people directly receive warning signals through their AM radio	Traditional methods used by IDCs can be time consuming to disseminate the message. Most radios in households are electricity-powered, which limits the availability of the radio only 18 hours a day (6AM-12AM) when electricity is available.

Climate change induced hazards are expected to increase in intensity in the future, and yet, all outer islands currently have only two modes of communications (phone and AM radio) whose reliability is questionable at the time of severe tropical cyclones, as proven in the past. If these channels fail at the same time, as in the case of the 1997 cyclone, the island will be completely disconnected from the outside information. This infrastructural barrier will be addressed through Output 2.1. Building on the basic principle of communication for disaster-preparedness, this Output will put in place multiple lines of back-up system many of which are not independent from one another, which is critical in increasing the chances of at least one mode of communication remains active even under the level 5 cyclones.

It is important to note that barriers associated with institutional coordination will be addressed by the SOPAC Division of SPC, which is providing co-financing for this LDCF project.

Capacity for climate-resilient planning, budgeting and monitoring both at local and national levels

The capacity within outer island administrations for facilitating participatory local development planning process is still underdeveloped although they have made progress in recent years with the support from UNDP-assisted SLG and CLGF. The support from these two entities resulted in the establishment of Island Strategic Plans where each island identifies and consolidates, through a participatory and gender-sensitive process, development priorities for submission to the Ministry of Home Affairs and Rural Development. Concurrently, the Special Development Expenditures and Falekaupule Trust Fund, two financial mechanisms to finance activities to meet the development priorities, have been established. The former represents the government's on-budget measures while the latter represents an off-budget mechanism. However, the ability of outer island administrations to identify additional risks, such as increasing climate variability, set out proposed actions to address them, budget them and reflect them in their respective ISPs has not yet been developed or reflected in a set of tools available to them. Compounded by underlying barriers related to the lack of knowledge/awareness about impacts climate risks on existing development needs and knowledge about specific adaptation options, as described above, local administrations and community members simply take into account business-as-usual scenarios into their development planning process. This results in an inefficient (and sometimes ineffective) development paradigm under a regime in which the natural environment, such as marine resources that they are heavily dependent on for their livelihoods, is changing.

In addition, the capacity of the central government ministries to provide guidance to outer island administrations in strengthening their development planning within the context of a changing climate is equally weak. For example, the Ministry of Natural Resources whose key mandate is to promote the sustainable use of natural resources which are inevitably influenced future climate change, the Ministry of Home Affairs and Rural Development who act as the custodian of outer island development process, and the Ministry of Finance who is the gatekeeper of the national government expenditures, have limited understanding of what the ongoing expenditures are on climate-sensitive sectors and what areas/sectors require additional investments to enhance climate resilience and ultimately achieve the national development goal of TK-II. Without such understanding, the guidance from these Ministries to outer island administrations also bears a risk that they simply follow business-as-usual development scenarios. The capacity at the national level in turn would enhance the likelihood of attracting external resources to fill the domestic financial gap and eventually assist outer island communities.

Because building resilience is iterative by nature, which inevitably involves some degree of trials, assessments and adjustments in a continuous process, it is important to build capacity of community members within the context of developing a climate-resilient development planning process. Because of the size of the country, it is community members and community groups who need to play the role of a third-party watchdog to ensure accountability of local administrations in general, and to encourage the iterative nature of the adaptive investments at the outer island level. The proposed LDCF project will address this barrier through Outcome 3. In particular, Output 3.1 will specifically aim at addressing the capacity barrier at the outer island level by working closely with Kaupules for mainstreaming climate risks into the existing ISP planning and budgeting process. Output 3.2 will strengthen the capacity of community members for strengthened third-party oversight. Finally Output 3.3 will enhance the capacity of the central government by strengthening their understanding of ongoing and necessary climate adaptation investments in Tuvalu.

1.4 Stakeholder Baseline Analysis

The stakeholder baseline analysis was wide-ranging and placed a significant emphasis on identifying/validating key stakeholder needs – particularly within the target communities in outer islands. This analysis provides the solid foundation on which the LDCF proposal is built.

During extensive consultations that took place between June 2012 and January 2013, assumptions presented in the PIF were revisited, capacity of stakeholders who will have an active role in the project implementation was assessed, and feasibility and willingness of communities in engaging in proposed project activities were investigated. Apart from the consultations with stakeholders at the main island of Funafuti, the preparatory phase consultations placed a considerable emphasis and efforts in visiting outer islands and discussing the proposed project. This is based on lessons learned from past numerous initiatives in Tuvalu that failed to engage effectively outer island communities early in the design stage, for logistical or financial reasons, and subsequently suffered from lack of active engagement and ownership, confusion and frustration among community members. A summary of stakeholder consultations held during the project preparation phase is shown in Annex 4.

The PPG team, which undertook the consultation process, was led by the Department of Environment, and comprised of an international project development consultant as a team leader, a national marine ecosystem specialist and an international climate finance/governance specialist. The PPG team received additional support from USAID ADAPT Asia-Pacific program through two international experts on coastal ecosystem and disaster risk management. Cognizant of the importance of involving CROP agencies which have long-standing relationship with the Government of Tuvalu, the DoE and UNDP also received in-kind assistance, through a coastal fisheries expert, from the Secretariat of the Pacific Community (SPC).

The methodologies used for stakeholder baseline analysis were:

- A National inception workshop to commence the PPG phase held in Funafuti, 19th June 2012 attended by 23 key stakeholders. The Inception Workshop Report is shown in Annex 6.
- Bilateral consultations with numerous stakeholders from national government agencies, subnational government agencies, target group representatives, local organisations, development partners, INGOs and NGOs (see Annex 4). These consultations were facilitated by four in-country visits in June, August and October in 2012 and January 2013.
- Extensive outer island consultations through an extensive Baseline Survey. A total of 214 community members were surveyed (55% male: 45% female) through 77 one-on-one or group interviews. People from all of Tuvalu's islands, except Niulakita (which was accessed through Niutao with which it is affiliated) were interviewed. Importantly, the interviews also ensured input from a very wide range of organisations with which people are affiliated by island, a total of 50 across the survey. These included Women's and Youth Groups, fishers, Kaplue, Falekapule and NGOs. The detailed results of the Baseline Stakeholder Consultation Survey are provided in Annex 5.
- Consultations with donors, CROP agencies and other groups based in Fiji throughout the PPG phase.

In combination, these in-depth consultations have provided the foundation for understanding the current conditions prevailing in Tuvalu that are leading to a deepening of the risks associated with climate change impacts. These risks include current approaches to securing livelihoods, disaster preparedness and the mechanisms for governance and securing finance for on-going adaptations after completion of the project. They have also provided a forum for testing the types of interventions that Tuvaluans will be willing to engage in. In addition, the Baseline Survey methodology was developed and applied through a capacity-building process with the DoF, including in-kind support from DoF in contributing to the costs of transport to outer islands and in providing staff to assist in undertaking the Survey. As such, the Baseline Survey can be replicated during the project to provide critical data to support Monitoring and Evaluation.

Table 2 Stakeholders and their roles during the PPG

Category	Institution / Stakeholder Group	Cooperation during PPG Phase

Category	Institution / Stakeholder Group	Cooperation during PPG Phase
National government institutions	MoFATTEL: Department of Environment	• Lead agency of PPG phase • Data and information about ongoing CC projects • Identify and guide the overall alignment and conformity with TK-II, Tuvalu Climate Change Policy and SNAP. • Participation in meetings and workshops • Organize workshops and outer island trips • Liaise with DRD, DoF, Ministry of Finance for management and operational arrangement • Information about NAPA-I project • National Communication on CC • Other environment issues
	MNR: Department of Fisheries	• In-kind contributions (through fisheries officers) for outer-island baseline survey • Data and information about donor-assisted initiatives in the fisheries sector, MMA/MPA management • Liaise with NZAP for co-financing and arrangement • Participation in workshops and meetings • Inputs for management arrangement
	MoHARD: Department of Rural Development	• Liaise with outer island Kaupules to facilitate the Baseline Survey • Information about SLG and CLGF initiatives • Participation in workshops and meetings • Inputs for management arrangement
	Ministry of Finance:	• Inputs to the financial arrangement under the proposed implementation modality
	Tuvalu Met Office	• Information about available climate change projections • Data on the baseline communication equipment, gaps and capacities • Participation in workshops and meetings
	Disaster Management Office:	• Information on the existing disaster management arrangement • Participation in workshops and meetings • Inputs for management arrangement
	Department of Tuvalu Media	• Information on the baseline (communications facilities, Radio Tuvalu) and capacities to undertake specific activities related to Outcome 2 • Participation in workshops and meetings
	Department of Education	• Information on the existing climate/environment-related curriculum • Inputs for potential development of climate/disaster management related school curriculum
Local government, community representatives	Kaupules and Falekaupules	• Validation of assumptions made in the PIF especially adaptation needs of communities • Feedback on the proposed activities and guidance • Participation in the Baseline Survey
	Island representatives resident in Funafuti	• Validation of assumptions made in the PIF especially adaptation needs of communities • Feedback on the proposed activities and guidance • Liaise with their respective Kaupules • Participation in workshops and meetings
	Island-level Disaster Management	• Validation of the existing disaster management arrangement • Information

Category	Institution / Stakeholder Group	Cooperation during PPG Phase
	Committee	• Participation in the Baseline Survey
	Community groups (Island-level fisher's associations; women's groups; youth groups; Red Cross volunteers)	• Participation in the Baseline Survey • Information
NGOs and other national organization	Falekaupule Trust Fund	• Participation in workshops and meetings • Co-financing discussion
	Tuvalu Association of NGOs	• Participation in workshops and meetings • Information
	Tuvalu Red Cross	• Participation in workshops and meetings • Data on existing disaster preparedness/response facilities • Information
Donors	SPC Coastal/Oceanic Fisheries Division	• In-kind co-finance for PPG activities • Technical inputs for development of project proposal • Potential collaboration and cooperation for project implementation • Participation in workshops and meetings
	SPC SOPAC Division	• Participation in tripartite discussions with GoT and UNDP on co-financing for disaster risk management activities • Information
	EU, NZAP, JICA, GTZ, Government of Taiwan, CLGF	• Information • Data • Potential for collaboration, cooperation and funding support

2 STRATEGY

2.1. Project rationale and policy conformity

The proposed project will implement three of the priority adaptation actions identified in the Government of Tuvalu National Adaptation Programme of Action (NAPA). Tuvalu's NAPA was completed in 2007. The NAPA used a participatory assessment process, based on country-driven criteria. This process selected priority activities to address urgent and pressing needs arising from the adverse effects of climate change.

No.	Priority Implementation Projects Identified in the NAPA
1	Coastal: Increasing resilience of Coastal Areas and Settlement to climate change.
2	Agricultural: Increasing subsistence pit grown pulaka productivity through introduction of a salt-tolerant pulaka species.
3	Water: Adaptation to frequent water shortages through increasing household water capacity,

	water collection accessories, and water conservation techniques.
4	Health: Protecting Community health through control of vector borne/climate sensitive diseases and promotion community access to quality potable water.
5	Fisheries: Strengthening of Community Based Conservation Programmes on Highly Vulnerable near-shore Marine Ecosystems.
6	Disaster: Strengthening Community Disaster Preparedness and Response Potential.
7	Fisheries: Adaptation to Near-Shore Coastal Shellfish Fisheries Resources and Coral Reef Ecosystem Productivity.

Table 3 Priority Implementation Projects Identified in the Tuvalu NAPA (shown in original priority order)

NAPA priorities 1, 2 and 3 are currently being implemented through the 1st LCDF-funded project that was initiated in 2008 (henceforth referred to as NAPA-I). NAPA priorities 5, 6 and 7 are the focus of the current project proposal. Consequently, lessons learned from the NAPA-I implementation, and opportunities to harmonise with the NAPA I are core considerations underpinning this proposal.

The national development strategy for the Government of Tuvalu is Te Kakeega II (TK-II), National Strategy for Sustainable Development, 2005 - 2015. TK-II is written within the context of achieving the national Millennium Development Goals. TK-II provides an overarching framework for key sectoral development strategies which collectively contribute to the achievement of the national goal of a "healthier, more educated, peaceful and prosperous Tuvalu." TK-II explicitly acknowledges, under strategic area 7, potential climate change impacts and effects on declining subsistence food production as a key obstacle to the achievement of the Strategy's vision and long-term sustainability of the nation. Importantly, the underlying strategy of the proposed project – effective and responsive governance for improved "planned adaptation" at the outer island level – directly responds to the strategies 1 and 4 of TK-II, which aim at good governance and empowerment of Falekaupule (island-level assembly) and outer island development, and strategies 3 and 7 which aim at advancing gender equality, reducing poverty and promoting sustainable use of natural resources including fisheries. This in turn, by the design of TK-II, helps the country move towards the achievement of Millennium Development Goals (MDGs).

Under the auspices of TK-II, Tuvalu has recently made significant policy reforms specifically in the area of climate change policy and adaptation planning. The Government of Tuvalu launched their national climate change policy entitled, "*Te Kaniva*, *Tuvalu Climate Change Policy 2012*" in July 2012. The climate change policy was built on consultative mechanisms developed in the NAPA and National Communication processes. In addition, the policy (in draft format then) was discussed, and endorsed on 30 September 2011 through the Tuvalu Climate Change Summit entitled 'Charting Tuvalu through the Challenges of Climate Change'. The Vision of *Te Kaniva is "*To protect Tuvalu's status as a nation and its cultural identity and to build its capacity to ensure a safe, resilient and prosperous future". Further the Policy's Goals are:

1. Strengthening Adaptation Actions to Address Current and Future Vulnerabilities
2. Improving Understanding and Application of Climate Change Data, Information and Site Specific Impacts Assessment to Inform Adaptation and Disaster Risk Reduction Programmes.
3. Enhancing Tuvalu's Governance Arrangements and Capacity to Access and Manage Climate Change and Disaster Risk Management Finances
4. Developing and Maintaining Tuvalu's Infrastructures to Withstand Climate Change Impacts, Climate Variability, Disaster Risks and Climate Change Projection
5. Ensuring Energy Security and a Low Carbon Future for Tuvalu.
6. Planning for Effective Disaster Preparedness, Response and Recovery

7. Guaranteeing the Security of the People of Tuvalu from the Impacts of Climate Change and the Maintenance of National Sovereignty

Six of the above seven Goals focus on adaptation, with Goal 5 on mitigation. Goals 1, 2, 3, 4 and 6 are of direct applicability to the current Project proposal.

Te Kaniva implementation, monitoring and evaluation arrangements are presented in detail in the *National Strategic Action Plan for Climate Change and Disaster Risk Management* (2012–2016) (known locally as the "SNAP"), which was released in October 2012. The SNAP is a comprehensive document that defines specific actions for each strategic area of *Te Kaniva.* For each strategy a clearly defined set of actions are given. This provides an invaluable level of detail for the current proposal to ensure policy alignment.

Figure 4 shows the logical framework between the three levels of planning, which depicts the linkages between the TK II, Te Kaniva and the SNAP for one of the TK II Strategic Priority (number 7). It clearly demonstrates the explicit and logical sequencing and policy justification for climate change adaption responses in Tuvalu, on which this project is based.

Figure 4 Linkages between te Kakeega II, te Kaniva and SNAP (Tuvalu 2012a)

In addition to climate change adaptation-specific policy and implementation actions, there is a series of policy initiatives that guide fisheries and disaster management. There are also a number of initiatives that underpin the implementation of the proposed activities envisaged in the LDCF project.

The Tuvalu Marine Resource Act, currently under review, will complement the Falekaupule Act to support community-based marine resources monitoring and management by Kaupules and local communities. The recently completed Fourth National Report on National Biodiversity Strategy and Action Plan (NBSAP) recognizes the synergy between climate change policies/adaptation measures and the importance of empowering Kaupules in sustainable management of marine resources.

The National Disaster Risk Management Arrangements (NDMA), under the National Disaster Act (2007), were completed in May 2011 under the guidance of the National Disaster Committee. The NDMA reflect the commitment by the government of Tuvalu to align national development with the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005–2015, by providing a framework broadening the disaster response focus of previous plans and reflecting a whole of government approach to Disaster Risk Management. The Disaster Management Plan, which is the primary component of the NDMA, includes activation plans and provides roles and responsibilities, from ministerial to departmental level and lists the various functional plans that have been prepared for specific events. It also contains procedural guidelines for the key committees outlining key roles and responsibilities. The Arrangements stipulate that the National Disaster Management Office (NDMO) within the Prime Minister's Office as the

liaison with the Island Disaster Committee under both normal conditions and in times of crisis. The SNAP acts as a joint action plan for the NDMA and *te Kaniva*. This is significant in that it clearly aligns the policy context of climate change adaptation with enhancing disaster management.

Since the late 1990s, the Government has placed a considerable emphasis on efficient and effective delivery of public services, including those affecting the priorities above, through a strengthened island-level governance mechanism. Good governance is identified in the TK-II as the first of the eight strategic areas. With limited government capacity at the central level and the geographical challenge with nine scattered small islands constituting the nation, establishing a self-servicing island-level governance system, supplemented by technical and financial support from the capital, is considered critical in achieving Tuvalu's development goals. The Falekaupule Act of 1997, which is also known as the Local Government Act, ushered in the current two-tiered governance system that comprises the national government and island-level administrations and provided the legal basis for the current decentralization process. This act devolved the local governance authority to the island council (Kaupule), which is the executive arm of island assembly (Falekaupule), to implement the TK-II and other community-level development priorities. In principle, this puts local communities, led by respective Kaupules, at the center of local development process. The Act also gave rise to the Island Strategic Plans (ISPs) and to financial allocation systems to support the implementation of the development priorities identified in ISPs.

2.2. Country ownership: country eligibility and country drivenness

Country eligibility

Tuvalu ratified the UNFCCC in 1992. Tuvalu completed its First National Communication in 1999 and it's National Adaptation Programme of Action in 2007[17]. The Second National Communication is currently in the pipeline.

Consistent with the UNFCCC Conference of Parties (COP-9), the project will implement three priority interventions in Tuvalu's NAPA in fulfilment of the criteria outlined in UNFCCC Decision 7/CP.7 and GEF/C.28/18. The project will catalyse and leverage additional co-financing resources from domestic, bilateral and other multilateral sources. The project requests the LDCF to finance the additional costs of achieving sustainable development imposed on the LDCF- eligible countries by the impacts of climate change. It is country-driven, cost-effective, and will integrate climate change risk considerations into the development of marine based livelihoods, disaster risk reduction and national budget allocation processes particularly to the outer islands, which are priority interventions that are eligible under LDCF guidelines. Given that climate impacts will fall disproportionately on the poor, the project recognises the link between adaptation and poverty reduction (GEF/C.28/18, 1(b), 29). Importantly, the proposed project will implement interventions that a country-driven process, evidenced by the NAPA, the Tuvaluan climate change adaptation policy framework and the PPG Baseline Survey, has deemed urgent and immediate, and in this respect, it meets the eligibility criteria of the Least Developed Country Fund (LDCF) as outlined in the LDCF guidance paper.

The project is aligned with LDCF Objective CCA-1 Reducing vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level, and CCA-2, Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national regional and global level. The alignments with the LDCF RBM Framework is presented in Project Results Framework.

Country drivenness

As outlined above, the proposed project is fully conformant with Tuvalu's national development priorities and strategies. This alignment is with comprehensive development planning framework, expressed through TK-II, MDGs and related policies. The alignment of this proposal also occurs with the recently

[17] http://maindb.unfccc.int/public/country.pl?country=TV

published climate change adaptation policy framework through the *Tuvalu Climate Change Policy* (te Kaniva) and *National Strategic Action Plan for Climate Change and Disaster Risk Management* ("SNAP").

Extensive consultations were undertaken during the Project Preparation Phase. These consultations were carefully designed to elicit feedback from key stakeholders regarding community-driven priorities and aspirations (see Annexes 4-6). This ensured that the direct beneficiaries of the project are actively engaged to provide both their input and to build support for project implementation. Annex 5 contains a summary of the extensive stakeholder consultations held during the Project Preparation Phase in Tuvalu and through engagement with regional development partners. Annex 6 provides the outcomes and attendees at the Inception Workshop held in Funafuti on 19 June 2012 that was attended by a broad range of government staff, NGOs, representatives of outer islands.

Undertaken in partnership with the NAPA-I Project, and with financial assistance from the Department of Fisheries, an extensive consultation process was undertaken in the Outer Islands. While this presented a significant logistical challenge, these consultations were vital to ensure a thorough Baseline Assessment process was undertaken and that the Project Proposal was fully aligned with the needs and priorities of Outer Island communities. The survey was conducted by Fisheries officers by interview in local language on each island using forms developed for the survey and designed to target different groups of people. The people interviewed were divided into the following[18]:

- Key informants: Kaupule staff and other individuals of standing in the community
- Fishers: including individuals and focus groups (such as fisher's associations)
- Focus groups: Disaster Management Committee (DMC), NGOs, Women's groups, youth groups and other community groups.

The combination of the in-depth consultations with outer island communities, extensive bilateral discussions with key stakeholders based in the capital atoll (Funafuti) and discussions with regional stakeholders has provide a solid basis for the detailed activities put forward in this proposal. In addition, the consultations have raised awareness of the proposal that will assist in implementation and ongoing sustainability at the Outer Island level.

2.3. Design principles and strategic considerations

The key principle in the design of the proposed LDCF proposal was to leverage the ongoing decentralization efforts of the Government of Tuvalu to deliver concrete adaptation benefits in alignment with priorities identified in the Tuvalu NAPA 2007. There are several strategic considerations that underlie this approach. First, the decentralization efforts, most succinctly described as the empowerment of Kaupules for better public service delivery, are one of the key national priorities in TK-II. Second, future climate change actions take place largely in outer islands. Third, despite the government and other development partners' efforts, Kaupule and communities still face considerable capacity constraints in understanding climate risks and dictating the design of adaptation actions. Fourth, the national level ministries and departments also struggle with their capacity constraints while they continue to face the possibility of greater climate change adaptation finance coming into the country in the future. All of these considerations culminated in the decision that the focus on capacity development of outer island communities within the overall context of climate change adaptation needs to be addressed while urgent adaptation needs are being met. The proposed LDCF project for this reason uses Island Strategic Plans as a key entry point for convening communities, identifying necessary actions, and financing them. This will in turn provide a critical impetus for advancing the government's priority for decentralization process as Kaupules and communities will gradually see the value of accountable, participatory development planning process for attracting development or climate finance in the future.

This, in turn, is reflected in the large domestic co-financing that will be leveraged by the LDCF resources. Namely, the LDCF resources will be built on the domestic resources that are currently made available to

[18] See Section 1.4: Stakeholder Baseline Analysis, and Annex 6 for further information

outer islands (through the Special Development Expenditure, Falekaupule Trust Fund distributions, and core revenues), and through the integration of climate risks into ISPs and continuous assistance in the island-level annual budgeting process, the way in which these resources are spent will depart from business-as-usual scenario to one that anticipates future climate risks in their expenditure patterns.

The prospect of a greater volume of climate financing in the future, especially for adaptation, also presented an important factor for the Government of Tuvalu in formulating the management arrangement for this LDCF proposal. In the past, climate-related projects, despite small in number, have been solely managed by the Department of Environment as the national custodian of issues related to environment or climate change. However, in the proposed project, the Department of Fisheries and Department of Rural Development act as a Responsible Party for the components related to building resilience of marine-based livelihoods and strengthening capacity of outer island administrations for climate-sensitive development planning, budgeting and execution. This marks a significant commitment of the Government of Tuvalu in building capacity of relevant ministries/departments for more climate-sensitive operations in their respective areas while the DoE continues to provide the overall coordination and ensure conformity with the national-level policies and strategies.

These strategic considerations were also brought to bear on the operational aspect of project implementation. The PPG consultations placed a strong emphasis on learning lessons learned from past donor-funded initiatives. One of the key lessons gleaned was that, understandably, the sheer difficulty in accessing outer islands. The two vessels that operate on a changeable schedule usually stay at any one island for a few hours, just enough to drop off and pick up passengers and freight. Majority of past projects which exclusively relied on these vessels failed to deliver agreed activities and outputs fully or on time, leading to a decline in the engagement of local communities, and ultimate loss of project impacts. To deliver intended adaptive outcomes, achieve cost-effectiveness of the investments, and ownership of the project results, the operational design of the project implementation follows scheduled outer island visits at least once every 9-12 months, cycling through 3 islands at each trip and each 30 days duration. A detailed analysis is presented in Annex 13. This will enable continuous assistance to Kaupules and outer island communities on technical and operational aspects of the project throughout the duration of the project implementation.

Best practices and lessons learned from the project are expected to provide an important insight for the government as they continue to support this process domestically and attempt to attract climate change adaptation financing from international sources. In particular, the overall lessons from this project will feed into the implementation and evaluation of SNAP and the formulation of the next national development strategy for 2016 and onwards.

Gender considerations

The project design process has ensured that gender considerations are integrated into all Components and activities. Project activities that will pay particular attention to gender-differentiated impacts of climate change are supported by a gender-related milestone identified in the Mid-Term Review of the TK-II, which is to *promote gender equity and expand the role of women in development*. This in turn will assist the government of Tuvalu directly in achieving TK-II Strategic Area 3 Goal: *Provide Tuvaluans with the highest attainable standard of health, adequate accommodation and an active life free from hardship and gender discrimination*.

GoT recognizes, through the draft Department of Women's Strategic Plan, that a Gender Perspective in Climate Change Strategies is extremely important, stressing "If resources are not allocated to reduce gender gaps, measures implemented to mitigate or adapt to climate change may contribute to reproduce social inequalities and run the risk of being less effective". Consequently, the gender-sensitive approaches to be employed in project implementation will be directly aligned to the draft Department of Women's Strategic Plan and will specifically:

- Recognize differential vulnerabilities and capacities of women and men
- Document and analyze the gender-differentiated marine-based livelihoods of men and women, and children, in Tuvlau

- Promote an equitable and active participation of women in its process for identifying the problems, priorities, and interventions
- Make sure that both men's and women's needs are properly addressed (i.e. reduce vulnerability and enhance capacities to adapt) and propose specific interventions for these purposes

Integration of gender-sensitive approach to project formulation started with the Baseline Survey, which was used as a key source of input to the project design. The survey achieved a reasonably-balanced gender distribution, with of 45% those interviewed female and 55% male. In particular, the impact of climate change on women (and other vulnerable populations) through changes in marine-base livelihoods practices is acutely recognized and accordingly adaptive response support in the project will reflect this. Collection of invertebrates and shellfish is typically a main fisheries-related activity carried out by women and the elderly, and it is these resources that are most likely to be significantly affected by the combined impacts of increasing ocean temperature increase, coral bleaching, and increasing intensity of tropical cyclones. Hence, in establishing and strengthening the climate-resilient management framework of Local Marine Managed Areas and Marine Protected Areas, women's participation in the design of by-laws, monitoring and enforcement will be encouraged. Postharvest processing of fishery products is an extremely important mechanism for adapting the use of the available resources to climate change impacts and is primarily carried out by women in Tuvalu. The project will reinstitute and expand on existing practices that have been in decline since the introduction of refrigeration and imported foods. During periods of (increasing) bad weather, storms and climate-related disasters power for refrigeration, fuel and shipping services are being increasingly disrupted. Increasingly, food security will have to come from the ability to store for later use locally caught resources. The project will work to re-establish more resilient food traditions, usually reliant on women, from within Tuvalu and elsewhere.

By nature of intervention, disaster risk management-related activities under Component 2 will target every individual in the country. However, cognizant that there is strong evidence internationally that women are more likely than men to fall victim of natural disasters, awareness and outreach activities under this Component will ensure women and children's participation. For example, gender disaggregated participation in mock drill exercise will be recorded so that their participation will continue to improve throughout the course of the project.

In developing the capacity of outer island communities as a key agent to monitor the use of domestic resources available in outer islands (Component 3), members of women's group are likely to play an important role. It is envisaged that representatives from women's groups will receive specific training on the use of participatory video to capture the lessons and challenge of project implementation as well as the general use of island's financial resources according to the ISP.

During the design phase, particular interest groups and vulnerable groups have been identified as presented below.

	Population Total[+]			Households[+]	Women-headed households (%)[¤]	Elderly population – above 60 years in age (%)[¤]	Number of youth groups on the island (of which women-only groups) [¤ 19]
	T	M	F				
Total	**9,561**	**4,729**	**4,832**	**1,568**			
Nanumea	664	305	359	128	28	18.3	n/a
Nanumaga	589	276	313	119	24	18.5	n/a
Niutao	663	314	349	143	24	10.9	n/a

[19] The groups shown here are not an exhaustive list of youth groups that operate within the island, but they are major ones.

Nui	548	263	285	108	28	17.9	n/a
Vaitupu	1,591	799	792	237	28	11.7	Unknown (3)
Nukufetau	586	286	300	118	17	13.0	3 (2)
Funafuti	4,492	2,281	2,211	639	29	6.7	5 (2)
Nukulaelae	393	186	207	68	27	12.9	n/a
Niulakita	35	19	16	8	n/a	n/a	n/a

Data source:
+: From 2002 census
¤: From 2011 Island Profile Survey

UNDP's Comparative Advantage

UNDP's comparative advantage in implementing this project is underpinned by its Sub-regional Programme Document for the Pacific Island Countries (2013-2017), in which improved resilience of Pacific Island Countries, with particular focus on communities, through integrated implementation of climate change adaptation and disaster risk management, is given a particular emphasis. Strengthening climate change adaptation in the Pacific Countries is a continuous pillar of UNDP's operation in the region and is reflected in the fact that UNDP plays the role of executing agency for the first NAPA follow-up project in Tuvalu. NAPA-I is one of the two ongoing projects in Tuvalu that focuses on concrete activities in outer islands. The lessons learned from supporting this project that have been amassed within UNDP, especially about delivering concrete adaptation benefits to remote island communities, was pivotal in designing this project document and will be critical throughout the implementation of this project. Moreover, it is expected that this project will have nearly 12 months (or potentially longer) of overlap in the implementation with NAPA-I project. This will not only enable coherent technical and operational support to both the projects from UNDP, but also ensure that substantive outputs from NAPA-I, such as results from outer island vulnerability assessments planned in 2013, will smoothly feed into the ISP revision process in NAPA-II.

Apart from support to NAPA-I, UNDP has been supporting the Department of Environment in meeting global environmental agreements such as Tuvalu NAPA, INC, SNC and NBSAP, and mainstreaming of environmental sustainability into national policies, planning frameworks and programmes. In addition, UNDP, in collaboration with TANGO, has been assisting the Government in promoting community-based management of marine resources through GEF Small Grant Programme. The proposed LDCF project will build on this initiative by strengthening the management of MPAs and designating additional areas of MMAs/MPAs to cover at least a quarter of reef areas in each island. The existing partnership with TANGO, reinforced by practical know-how of mobilizing communities for the management of protected area, will be an important advantage UNDP brings in implementing the NAPA-II project. Furthermore, UNDP also played a leading role in establishing the only national conservation area that exists in Tuvalu – Funafuti Conservation Area – with financial assistance from the GEF as part of the Regional South Pacific Biodiversity Conservation Programme in 1996.

Apart from the areas related to climate change or environmental management, supporting the government's aspiration for enhanced outer island-level governance and participatory decision making targeting vulnerable groups, has been an important area of UNDP support. UNDP's assistance for local governance reform in Tuvalu dates back to 1997 when the Falekaupule Act was enacted and the process of devolution of authority first began. Since 2005, support for more institutionalized outer island development framework has been provided through SLG I and II. Kaupule's capacity to formulate Island Strategic Plans was strengthened and implementation of development projects supported. In the phase II of the project, the focus continues to be the promotion of even greater participation and accountability in the local governance process. Although SLG will come to an end by the end of 2013, the overlap of project implementation will ensure smooth transfer of knowledge at the country level, and within UNDP, technical capacity and experience remain within UNDP, which will be surely leveraged during the implementation of the LDCF project.

The support from UNDP throughout the implementation of this project will be operationally, administratively and technically ensured through the four-layered structure: the resident Country Development Manager in Tuvalu provides the first point of interface with the Government of Tuvalu, which is supported, operationally, administratively and technically by the Fiji Multi Country Office. Regional advisory capacity based in the UNDP Asia Pacific Regional Centre in Bangkok, with dedicated Regional Technical Advisers focusing on supporting adaptation programming and implementation, will provide additional layer of support. UNDP's network of global Senior Technical Advisors provide additional technical oversight and leadership helping to ensure that programmes on the ground achieve maximum policy impact. UNDP is the only GEF agency that has a full-time resident presence in Tuvalu.

2.4. Project Objective, Outcomes and Outputs/activities

The overarching goal of the project is to increase the resilience of outer island communities to future climate change induced risks such as declining marine resources productivity and intensifying climatic hazards. The Project's objective is: resilience of island communities to climate change variability and risks is strengthened through participatory island-level planning, budgeting and execution and community-led investments. The project envisages achieving this objective through the following set of Outcomes.

1. Marine based coastal livelihoods of Tuvaluan outer islands made resilient to declining productivity induced by climate variability and change
2. Capacity of outer islands enhanced to respond to increasing climate induced hydro-meteorological risks
3. Enhanced capacity of communities to access internal/external financing for community-based climate change adaptation through existing participatory development planning processes

The activities proposed to achieve each of the three Outcomes are described in turn below.

OUTCOME 1: Marine based coastal livelihoods of Tuvaluan outer islands made resilient to declining productivity induced by climate variability and change.

Co-financing amounts for Outcome 1:

Government of Tuvalu:	$	62,176
SPC:	$	1,185,000
NZAP:	$	1,000,000
(Total co-financing:	$	2,247,176)

LDCF project grant requested: $ 2,000,000

Baseline (without LDCF intervention): Tuvaluans living on outer islands are heavily dependent on subsistence for their livelihoods. On outer islands 99% of households consume home produce (from fishing, cropping and livestock) compared with 74% in Funafuti. Fishing is the second most important source of subsistence income after agriculture. At the same time, in outer islands, food expenditure accounts for 68% of total consumption expenditure, whilst on Funafuti, the equivalent figure was only 43%. This is partly to be expected as the outer islands have less access to many non-food expenditure items that are readily available on Funafuti (HIES, 2010). It also suggests that there is little additional cash in the system for stockpiling imported food or purchasing equipment needed for security against disruption of inter-island travel due to bad weather.

The resilience of marine-based livelihoods of many Tuvaluans has dramatically decreased in recent years. Economic development has increased access to modern fishing methods such as powered boats,

and to reinforce economic viability of the fishing industry. Donor support since the early 1970's has introduced modern facilities such as freezers and ice making machines set at the Community Fishing Centres (CFC). However, difficulties with large distances between islands never made the fishing activities in outer islands commercially viable and poor maintenance contributed to the declining feasibility of the CFC. In the meanwhile, however, the use of motor boats continues to exert pressure on marine resources and contributed to gradual erosion of much of traditional fishing methods particularly among youth. In the past there were techniques in use that accessed reef and near-shore pelagic fisheries using local materials and skills, including the use of fish and other types of traps, the use of canoes, coconut torches and locally-made nets for flyingfishing (called *laama*), scoop netting in the mouth of natural reef channels and noose fishing (*sele paala*) and collecting or gleaning from the reef areas usually by women. The Baseline Survey (Annex 5) revealed that few outer island household have access to traditional and resilient marine livelihood methods due to a shortage of raw materials (e.g. logs for canoe-building) and traditional knowledge. In recent years, with increasing fuel price, fishers are becoming more receptive to lower cost, more resilient methods, as shown in the Baseline Survey. Nonetheless outer island communities still have no access to outside (international) information on making a transition in their marine-based livelihood practices, including improved canoe designs and materials, resilient fishing and fish processing methods, and other innovative measures such as aquaponics.

To reduce overfishing pressure on already vulnerable reef resources, the Government of Tuvalu has established Marine Protected and Marine Managed Areas[20] since 1996 largely with support from SPREP, the Locally Marine Managed Area (LMMA) Network and the UNDP/SGP programme. The programmes so far have assisted in designating 11 Marine Protected Areas (MPAs) and MMA areas covering 75.7km^2 of island reef areas (including Funafuti Conservation Area at 36km^2) (see Annex 11C for the list of MPA/MMA). This is a positive step towards more sustainable management of dwindling reef resources, and stakeholder consultations and the Baseline Survey confirmed that community members are aware of positive benefits. Specifically, 87% of those interviewed confirmed that they were aware of MPA/MMA activities on their island, including the establishment of areas as MPAs or MMAs and the restriction of use of certain types of fishing gear or protection of certain target species (Q94, Annex 5); 84% said that MPAs/MMAs were useful and were in favour of them (Q96); About 1/3 of people said that the abundance of marine resources has increased as a result, including spill-over into unprotected areas. However, they also revealed that MPA/MMAs are not currently understood as community resources for building resilience and there is confusion among fishers about the distinction between “no-take” zones (MPAs) and “managed catch” zones (MMAs), seasonal bans, boundaries, permitted mesh size, and how informal rules are generally applied. Although the Marine Conservation Act, in principle, provides a framework for promoting sustainable use of marine resources, in reality, all resource management decisions pertaining to marine areas falls under the purview of the *Falekaupules*, whose capacity for establishing by-laws and enforcement is weak. Consultations during the PPG validated that the level of local management of the MPAs/MMAs showed considerable variations and little information was available as to how the application of managed catch is carried out or local rules are enforced. Instead of treating MPAs and MMAs as part of the overall management of the island, its resources and development, Kaupules have encouraged tendency to treat them as 'a project'. In some cases, the managed/protected areas were seen as reserved zones for the Kaupule to undertake extractions during special occasions, VIP visits, or for tourists. To compound this weak community-level management of MPAs/MMAs, resource monitoring is hardly undertaken and there is little capacity among Fisheries officers to undertake them. The lack of information about effectiveness of community-based MPAs and MMAs in turn affects the ownership of and interest in proper management of fisheries resources among communities. Lack of basic data for management is an important factor hindering good evidenced-based fisheries decision-making and management at both national and local levels.

[20] A Marine Protected Area (MPA) is a no-take area designed to provide ecological buffering, often in the form of protecting a breeding stock and exporting reproduction to surrounding areas. A Marine Managed Area (MMA) is an area subject to fishing, but which is managed sustainably using a range of monitoring and management techniques (which may include some MPA areas within it).

There are several donor-assisted programmes that attempt to strengthen institutional and human capacities of the Fisheries Department for sustainable use of marine resources and to promote scientific assessments of the viability of marine resources. SPC is undertaking a sub-regional project in five countries entitled "Monitoring the impacts of climate change on coastal fisheries" funded through Australia's International Climate Change Adaptation Initiative, of which Tuvalu is one of the five pilot sites. The project will design and field-test monitoring protocols to determine whether changes are occurring in the productivity of coastal fisheries and, if changes are found, to identify the extent to which such changes are due to climate change. The project has selected Funafuti as a pilot site from which to collect data and conduct a baseline assessment on the coastal fisheries resources and habitats. The project is also providing capacity building training to government officers at the central level to undertake monitoring activities using the country's two temperature data loggers. Regionally, SPC have built a database to which member countries can contribute data with the intention to build long-term feasibility of impact assessment of climate change on various locations of fisheries ground supported through its Coastal and Oceanic Fisheries Programme by building capacity for data collection (currently in Tuvalu, this assessment is only possible in Funafuti due to availability of historic data). This is supplemented by a recent development of Creel Survey[21] Manual which can be a useful tool for monitoring the health of marine ecosystem. SPC is also providing technical assistance targeting Fisheries Departments of member countries for promoting coastal artisanal fisheries.

New Zealand Aid Programme (NZAP) has recently started a new programme in which a fisheries advisor is placed in Tuvalu Fisheries Department to strengthen their fisheries management capacity and increase revenues for Tuvalu. This builds on the Forum Fisheries Agency (FFA) Institutional Strengthening Scoping Study Report: Activity Feasibility Study of 2010. The FFA study took into account the National Development Strategy 2008-2015 (TK-II) and the National Master Plan for Fisheries Development 2008-2011 that identified enhanced oceanic and coastal fisheries management as one of their priorities. The advisor is expected to facilitate better coordination of donor-assisted programmes in the country to reap the maximum benefits from ongoing initiatives.

It is important to note that the collection of the baseline information of the fisheries sector in Tuvalu during the PPG phase also collected in-depth information on unsuccessful past endeavours to commercialize fishing activities in the outer islands. Several donor-funded initiatives attempted in the last 50 years to introduce/enhance efficiency and profitability in the fishing practices in outer islands in the form of aquaculture (*tilapia massambica*, seaweed, clams, trochus, and milkfish). While the milkfish cultivation, supported by the Government of Republic of China (Taiwan), is still ongoing and no economic assessment has been undertaken to date, all other initiatives either did not sustain or had larger negative side effects (in the case of tilapia). Details of these initiatives are presented in Annex 11B. It is for this reason that some of the activities proposed in the PIF have not been incorporated into the proposed adaptation activities.

Adaptation alternative: Foregoing discussions on climate change impacts on fisheries clearly indicate that a key adaptation measure for Tuvalu is to reduce pressure on highly vulnerable marine resources in the demersal, intertidal and subtidal zones. Tuvaluan livelihoods and diet are heavily dependent on these resources, and to facilitate a transition of fishing practices more towards near-shore pelagic zones, which are likely to increase productivity in the medium-run in the face of changing climate. This Component of the proposed project explicitly focuses on assisting this transition while increasing the resilience of already vulnerable near-shore/reef resources. The design of this Component draws upon lessons learned in fisheries support over many years from the Pacific region in general, and from Tuvalu in particular, to reflect unique and challenging circumstances that surround its remote islands. As a result, the adaptation interventions/investments proposed under this Component have been designed as a package of activities that incorporate the integration of traditional and modern techniques, low-cost and maintainable characteristics, responsiveness to gender-differentiated impacts of climate change, and participation of youth.

[21] Measurements of fish caught by fishers

A key principle that underlies the designing of this Component is participation of communities in the design of interventions and the sustainability of adaptive investments by collaborating closely with SPC, a regional institution with a longstanding track record of supporting Pacific Island Countries, including Tuvalu. The application of this principle started with the PPG process where a number of stakeholders in outer islands were consulted with various potential options to gauge their interests and commitments to actively participate in project activities. Moreover, involvement of an SPC advisor throughout the course of the PPG phase, who will also oversee the baseline projects of SPC, not only enables the project to leverage their technical expertise in this area, but also resulted in a set of adaptation investments which are fully aligned with SPC's strategic plan, which in turn incorporates respective member states' development priorities. While integrating climate resilience perspectives, this will also ensure that the support structure will be taken up by SPC even beyond the cycle of the LDCF project. Lastly, through activities related to mainstreaming climate risks into Island Strategic Planning (ISP) and budgeting process though Component 3 (see below) and its target, it is envisioned that additional adaptation investments can be identified that seek to enhance marine-based livelihoods by communities and integrated into their development priorities within ISPs.

Output 1.1 Climate-resilient marine-based livelihood techniques are supported benefiting at least 50% of the population.

LDCF resources will focus on investments that facilitate climate resilient fishing practices that will enable outer island communities to continue their dependence on fishery resources while ensuring sufficient considerations on climate impact on changing productivities of various fishing zones and increasing intensity of cyclones during which time fishing activities cannot be undertaken. The adaptive investments will comprise of the following key interventions:

Facilitating balanced access of near-shore and oceanic marine resources

- Near-shore Fish-Aggregating Devices (FADs)

LDCF resources will be used to put in place two near-shore FADs in each island. This, combined with the promotion of traditional canoe building and use (described below), will enable fishing communities to access more resilient, and relatively more abundant near-shore pelagic fisheries resources while reducing the pressure from fishing on reef resources, thereby enhancing their resilience in the face of increasingly intensive climate conditions. Other indirect benefits through the use of FADs will be to reduce fuel consumption, which is the largest cost item for fishers. Near-shore FADs are widely seen as a way of providing an array of benefits to local fishing communities, with the most important benefits including: (i) reduced pressure on reef resources by moving the focus to more resilient pelagic stocks; (ii) increased catches overall; and (iii) less distance to travel to fish making for better safety, better access for canoes and for those that use powered boats, reduced fuel consumption. The placement of FADs will accompany hands-on training for fishers on FAD fabrication, deploying and maintenance, and setting local by-laws for the use of FADs. This will build directly on the TA assistance on this technology that SPC is currently providing at the national level, and the LDCF resources will be used to bring this climate resilient technology to outer islands. Discussions and workshops will be used to identify the best type of design and management needs. The LCDF project will focus only on near-shore FADs which are those that will be of most benefit to canoe fishers, and will deploy at least two on each island and provide at least 2 backups. Benefits derived from the FADs will be monitored as part of the creel survey described below (the basic design of FADs is presented in Annex 11D

- Canoe-building

Complementary to FADs, the LDCF resources will be invested in supporting fishers to use traditional canoes for accessing near-shore and oceanic resources with a far lower cost than with powered boats,

with FADs providing the fishing grounds for canoes. Reinforcing and increasing the use of canoes as part of coastal marine livelihoods will mean that more fishers will be able to gain lower cost access to a wider range of fishing grounds (e.g. inside lagoons during bad weather; FADs outside the lagoon in good weather) without being dependent on dwindling supplies of fuel, boats and outboard motors that need costly repairs or a separate income to buy the fuel when it is available. Combined with other activities (such as postharvest processing which will also be supported with the LDCF resources) this is expected to increase the supply, storage and range of marine seafood on the islands ensuring food security during periods when fishing is not possible, which are expected to increase in the future. The project will draw lessons from other countries in the region such as PNG and Kiribati and seek to merge old and new materials and technologies to ensure that dwindling tree resources are preserved and the most efficient designs available for fishers to use (see also Annexe 11A). It is important to note that an international expert hired by the project to promote traditional canoes will facilitate leveraging the available knowledge and skills among elders in making canoes while the project will offer a platform for knowledge and skill exchange between the elders and youths. A Community Fishing Center (CFC) which exists in each island will be refurbished so that they can host workshops, store of fishing tools, and conduct trainings on canoe building, traditional fishing and postharvest processing. An annual event (see below) will be organized in the last two years of the project cycle to increase dialogue and comparisons of designs among islands, with the expectation that designs will continue to be refined. Designs arising from this work would be printed as a booklet in Tuvaluan on what works locally as part of Output 1.3. Additional sea safety training and equipment will also be provided as part of this activity. It is envisaged that canoe-building demonstration/training financed by LDCF will result in building of 10 canoes per island (directly benefiting 58 people in each island or 464 people overall, representing 9% of outer island population). However the benefits in the long-run are expected to expand to greater number of people as the project will promote the use of locally available materials and skill building among community members.

- Traditional fishing methods

Traditional fishing methods are important in the context of building resilience to climate change because in combination with LCDF activities aiming for improving resource monitoring and management (promoted under Output 1.2), they can adjust their fishing methods to minimize resource extraction of certain species under stress and ensure food security during periods of poor weather and in the absence of fuel and other types of imported fishing gears. Local fishers and Fisheries Officers in Tuvalu will be supported to identify those methods most suited to ensuring food security, including management actions that may determine where and when they are used. LDCF resources will be used to support activities aimed at sharing knowledge between islands and encouraging elders to share their knowledge with youths will also be promoted. As described above, traditional methods that have been identified (and will be validated during the inception phase of the project) include various traps, use of natural materials (pearl shell, coconut husk twine), coconut torches and locally-made nets for flyingfishing (called *laama*), scoop netting in the mouth of natural reef channels and noose fishing (*sele paala*) and collecting or gleaning from the reef areas usually by women.

- Postharvest processing - resilient technologies

Postharvest processing can help buffer communities against instances of bad weather by allowing them to store food in technologically simple ways that are not as dependent on electricity supplies which may be the first to be affected during poor weather or in the face of irregular fuel supplies. LDCF resources will be used to assist the implementing partner to strengthen the resilience of existing postharvest processing techniques as well as introducing new techniques. The baseline survey revealed that salting and drying seafood is the most common seafood processing techniques (representing 40% of responses) followed by smoking and drying (without salting) (19% and 8%, respectively). These techniques are more widely practiced among poorer households that cannot afford refrigerators. LDCF resources will introduce modern technologies such as solar dryers and smokers intending to reduce their dependence on limited tree resources and/or to bring in efficiency in the production. These will be supplemented with the introduction of other forms of preservation, some using spices. The Department of Fisheries will initially

capture and validate the baseline survey on existing postharvest techniques, and subsequently reflect them in the specific design of the improved techniques introduced, assisted by an international expert on postharvest food processing from the SPC. Existing as well as improved techniques will be captured in a booklet (produced in Year 2) and they will be demonstrated during the annual events organized in Year 3 and 4 of the project implementation (on 1st October as part of National Tuvalu Day). Supported by the expert, the Fisheries Officers will organize trainings targeting women's groups in outer islands, who are the main seafood processors in Tuvalu. Annual events will give an opportunity to women representatives from each island to demonstrate food preservation techniques from their respective island and to learn from other outer islands.

- Aquaponics

Aquaponics is a combination of aquaculture and hydroponics, allowing for the growth of fish and plants in an integrated system, creating a symbiotic relationship between the two[22]. LDCF resources will be used to assist the Department of Fisheries in establishing a trial of a simple aquaponics system in Motufoua High School on Vaitupu. SPC is currently undertaking its own trials and thus their expertise will be sourced as a service provider to train fisheries officers and school staff in setting up and maintaining the system. The school has been chosen as this is the only high school in Tuvalu and students are expected to gain awareness about climate change adaptation through hands-on experience with a concrete adaptation measure. The system will use solar panels and pumps and minimal investments in materials that are difficult to get for outer islands and grow milkfish. Milkfish are prized as food fish in Tuvalu and are able to grow in freshwater.

Figure 5 A simple and a more elaborate aquaponics layout

Output 1.2 Capacity of local administrations, CSOs, communities and Community Fisheries Centers enhanced to integrate climate risks in the community-based management of Marine Management Areas (MMA)/Marine Protected Areas (MPA)

[22] An aquaponic system uses the water from a freshwater fish tank to circulate through a grow bed where edible plants are grown (see Figure 5). Nitrifying bacteria convert fish wastes into plant-available nutrients. The plants use these nutrients as their main nutrient supply. The fish also benefit from this process, as the water is cleared of nitrates by the plants. Aquaponics is an entirely different approach to those that have been tried for aquaculture in the past in Tuvalu and would build climate-resilient livelihoods by diversifying food production away from areas more subject to climate impacts. Using low-cost methods, this is a form of aquaculture that is more like subsistence gardening and within reach of families.

including zoning guidance, marine resource stock surveys, and monitoring and enforcement

Complementary to Output 1.1, which facilitates adaptive investments for more balanced dependence on reef and near-shore resources, LDCF resources will be used to promote climate resilient management techniques of marine resources especially in the reef zones through strengthening and establishing MMA/MPA and their management framework. As described earlier, SPC's assessment which presents a currently most downscaled impact assessment of climate change on marine resources in Tuvalu demonstrates that productivity of reef resources is predicted to decline due to climate change. This assessment leads to a conclusion that putting in place an improved management framework for controlled harvests of reef resources such as invertebrates and shellfish is critical for several reasons including, firstly, collection of reef resources is an important livelihood activity for women and the elderly, so this needs to be practiced in a climate-resilient manner; and secondly, to maximize the impact of Output 1.1 which will reduce the overfishing pressure from this area. It is also important to note that establishing a site-specific biological response from external climate change stimuli (such as bleaching of coral reefs) requires historical information (generally over 20 years) about the stock of marine resources vis-à-vis various climate factors, and this information is only partially available in Funafuti. Hence, in outer islands, an effective adaptation option at present to build resilience of marine resources is to enhance the general health conditions of already stressed reef ecosystems while contributing to the medium- to long-term adaptation by building a body of site-specific data that are needed for designing more specific adaptation actions. As described below, this work is currently being supported by SPC, which provides co-financing to this component.

Given the insufficiency of the basic understanding among community members about existing MPAs/MMAs and their management framework as evidenced in the Baseline Survey and stakeholder engagement during the preparatory phase, the activities in this Output will begin with capturing and verifying the information about existing areas in each island (See Annex 11 for the information collected during the preparatory phase). This includes the collection of information about existing by-laws and local agreements with respect to "no-take" and "controlled catch" and the timing of enforcement and ongoing management practices. Community members will be at the center of the initial information collection and validation to clarify the language used regarding the different types of designated areas, clearly separating the roles of MPAs as no-take areas from MMAs (see footnote 20 for the distinction between MPAs and MMAs). Each type of area has an entirely different function and can be used in combination to build resilience in the coastal resources of each island. Once these types of areas are fully understood by the communities and Kaupules, the Fisheries Department, with assistance from project team, will work with the existing governance structures to strengthen and formalise them, which could include reclassification of certain areas and redevelopment of the agreements previously made (if necessary). This will be followed by strengthening the existing MPA/MMA boundaries by installing beacons and flags as well as the establishment of additional MMAs in fragile reef areas. LDCF resources will be used to target providing coverage of at least a quarter of reef areas in each island designated as MMA (the exact area will be assessed during the inception phase of the project). As enforcement and policing is in general a challenge in outer islands, the *process* of establishing MMAs in a fully participatory manner is as important as the end results. Community members will be mobilized to participate in the discussion, understand the benefits of managed catch and communal management practices.

As an integral part of climate resilient management of MPAs/MMAs, LDCF resources will be used to enhance the capacity of community members, especially fisher's associations, to undertake fisheries resource monitoring surveys using the Creel survey methodology and tool developed by SPC. Creel survey is a low-cost method to monitor the amount, types and size of fish catch at markets or household level to extrapolate the health of fisheries. This is expected to lead, in the long-run, to a better understanding of marine/reef resources and ecological responses to exploitation and impacts of climate change. More importantly, the impact from project activities in Output 1.1 and 1.2 will be reported in an explicit manner through the continuous application of the survey throughout the course of the project. It will also contribute to building much needed regional database, established and managed by SPC through the co-financed regional Coastal Fisheries Programme, which is crucial to accurately understand

the impact of external stimuli, including climate change, on the health of fisheries resources[23]. The work is simple enough to be undertaken by community members, overseen by Fishermen's Associations, and during the periodic visits by project staff, data are collected and additional capacity support, if needed, provided.

Output 1.3 Awareness enhanced for at least 2000 people including island Kaupules, central government staff, CSOs, and community members to understand and respond to the impacts of climate induced risks on marine based coastal livelihoods

LDCF resources will also be used to enhance the awareness about climate impact on fisheries resources through community awareness raising sessions, annual events and production of a series of community outreach materials related to investments in Output 1.1 and 1.2. These sessions and events, organized in outer islands and the capital, will take place throughout the project implementation so that in the early phase, they are used purely for awareness raising and as the project implementation progresses, the nature of the events shift more to reviewing and sharing of the impacts of adaptive investments with community members. Outreach materials will be produced by the Department of Environment and Department of Fisheries assisted by the project-financed officers. Raising awareness about adaptive value of investments proposed in this Component is a critical element of sustainability of development/adaptive benefits.

The annual event will present an opportunity for outer island community members to share and learn lessons from other island communities. It will focus on demonstration of canoe design from different islands, fishing competitions using traditional methods and the showcasing of postharvest processing and other events. The annual gatherings will also be used to present the results of the Creel surveys in order to demonstrate the effectiveness of MPAs and MMAs. LDCF resources will assist key stakeholders from outer islands to attend and participate in events and will encourage local business and NGO sponsorship in prizes, retailing of preserved seafood products, helping to ensure the establishment of the event on an annual basis. It is proposed that this event will be organized as a side-event associated with national Tuvalu Day in Funafuti on 1st of October each year. The event would not become active until Year 3 of the project after the investments proposed under Output 1.1 and 1.2 have been at least in part implemented.

Organisations such as SPC and SPREP already have amassed a large body of booklets, pamphlets, posters and other literature that provide guidelines and more detailed information relevant to many of the topics included under this project (e.g. Sea safety). LDCF resources will be used to develop several types of awareness and information materials: (i) translation of existing relevant materials produced by regional organisations into Tuvaluan while customizing based on specific investments proposed under this Component or integrating climate change element; (ii) creation of new materials where there are currently none such as Tuvalu specific traditional and resilient fishing practices; and (iii) use of radio, video and internet to promote understanding of issues that affect communities in the area of climate change and fisheries The project resources will be used to translate (and improve with climate-resilience focus, where necessary) these existing materials into Tuvaluans and distribute to outer island communities.

[23] In recent years, there have been increasing reports of Ciguatera (fish poisoning) from consumption of reef fish throughout the tropics. “Elevated sea surface temperatures associated with global warming are believed to already be exacerbating the extent and the range of ciguatera (Skinner et al, 2011. Accessed at http://www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0001416).” While the project’s general approach to facilitate a shift from the current heavy dependence on reef resources to pelagic resources will likely ameliorate the situation in general, it is recognized that activities proposed under Output 1.2 are geared towards maintaining the resilience of reef resources. For this reason, creel surveys will also be used to record cases of Ciguatera, if any, so that necessary actions can be proposed if necessary.

Some of the activities, such as canoe-building are likely to lead to new information gleaned from elders, fishers and the overall results of the LDCF funded activities that will be captured into booklets. These would be used for sharing among islands and within the region to ensure the information is not lost, and countries with similar conditions can benefit from each other's knowledge. These will be printed in the last year of the project to ensure all lesson learned can be incorporated.

Regular radio programmes and short community-made videos will be used (See Output 3.2) to disseminate success stories among Tuvalu's islands as activities aimed at enhancing resilience of marine-based livelihoods are completed. The establishment of a simple web page will play a central role in allowing some of the written materials to be accessed from outer islands, and news stories which could be regularly updated. A newsletter which mirrors the web page will be printed to allow for news on the project to be physically distributed on outer islands during the regular visits.

Table 4 Summary of main project activities for Component 1

Output 1.1 Climate-resilient marine-based livelihood techniques are implemented benefiting at least 50% of the population

Indicative activities

1.1.1. Organize meetings with outer island fishers, Fisheries Officers and Kaupules to agree on the design and specific locations of FADs
1.1.2. Establish two Fish Aggregating Devices (FADs) near the island (200-1000m depth) with Fisheries officers and fishers
1.1.3. Refurbishing the existing CFCs as an open-roof area for capacity building training and information exchange as well as storage space for fishing gear
1.1.4. Organize training sessions for improved canoe designs, traditional fishing techniques and postharvest processing of fished resources
1.1.5. Procurement and installation of sea safety equipment such as solar powered lights at major landing sites.
1.1.6. Organize training sessions on sea safety targeting fishers
1.1.7. Establishment of a trial of a simple aquaponics system in Motufoua High School on Vaitupu

Output 1.2 Capacity of local administrations, CSOs, communities and Community Fisheries Centers enhanced to integrate climate risks in the community-based management of MMA/MPA zones including zoning guidance, marine resource stock surveys, and monitoring and enforcement

Indicative activities

1.2.1. Comprehensive, community-based information collection and analysis including GIS mapping, collection of information about existing by-laws and local agreements, and ongoing management practices
1.2.2 Organization of a meeting with island Kaupule, fishers and community member (including women and youth) to finalize the locations of new/extended MPAs/LMMAs
1.2.2. Training of members of Fisher's associations in outer islands to undertake fisheries resource monitoring using the Creel survey methodology and tool developed by SPC

Output 1.3 Awareness enhanced for at least 2000 people including island Kaupules, central government staff, CSOs, and community members to understand and respond to the impacts of climate induced risks on marine based coastal livelihoods

1.3.1. Production of radio programmes and community videos capturing climate-resilient marine based coastal livelihoods, progress of project activities, announcement of annual event. Community videos will be procured as part of the efforts to enhance monitoring and reporting capacity in outer islands (Output 3.2)

1.3.2 Production of lessons learned materials on canoe building, climate-resilient postharvest processing technologies, and assessment of MPAs/LMMAs.
1.3.3. Translation of awareness raising material on resilient marine-based coastal livelihoods collated through assessment of relevant resources that are available both within and outside of Tuvalu
1.3.4. Production of radio programmes and community videos
1.3.4. Organization of an annual event at Tuvalu Day for showcasing the project activities on climate-resilient livelihood practices in year 3 and 4

OUTCOME 2: Capacity of outer islands enhanced to respond to increasing/intensifying climate induced hydro-meteorological risks.

Co-financing amounts for Outcome 2:

Government of Tuvalu:	$ 8,371,469
SPC:	$ 794,460
Tuvalu Red Cross:	$ 207,500
(Total co-financing:	$ 9,373,429)

LDCF project grant requested: $ 1,500,000

Baseline (without LDCF intervention): The vulnerability of Tuvalu is inherent given its geophysical characteristics and this is compounded by weak communications facilities that are critical in enhancing disaster preparedness and effective response. This is in part because there is no reliable communications infrastructure in the outer islands, and the existence of a weak policy framework governing disaster risk management. Each of these aspects was reviewed in detail during the PPG including in-depth consultation through the baseline survey of Outer Islands.

Weaknesses in Communication Facilities

Tuvalu presently has multiple lines of communications that connect the main island of Funafuti and its eight outer islands. These include the AM radio system that broadcasts throughout Tuvalu and which includes information about current weather (especially for marine activities) and warnings in the event of upcoming cyclones and other possible disasters. At present satellite phones and landlines are also used by island Kaupules and the Tuvalu Red Cross volunteers to receive emergency information during and after a disaster. The Tuvalu Meteorological Service weather stations located in three outer islands, Nanumea, Nui and Niulakita, have HF communication systems to exchange weather information with the main office in Funafuti. This system can also be used to send warnings to these islands, but due to power supply limitations, it is only available when the outer island stations call Funafuti. This equipment is very unreliable. As well as being used as a communication mechanism during extreme events, the system also plays an essential role in providing up to date observations of present weather at each location that is needed to provide regional forecasting data. As described below, detailed assessments undertaken during the

New JICA-provided AM transmitter at Funafuti

preparatory phase identified weaknesses in each of these modes of communications, and moreover, their susceptibility to extreme weather. Consequently, the multiple communication channels that currently exist in Tuvalu has a high likelihood of a total failure, as it happened in the past, during severe cyclones.

Broadcasting Service Limitations

JICA's recent assistance in building a new AM radio transmission facility, replacing a failure-prone and maintenance-heavy FM system, is an important step towards establishing continuous and reliable communication network between Funafuti and outer islands. While the Baseline Survey validated that the transmission of the new AM system is currently working (despite varying qualities reported[24]), it also demonstrates weaknesses in the existing communication lines in Tuvalu. For example, 40% of respondents cited radio as the most common method of receiving early warnings while 67% of respondents use mains powered[25] radios. This means that the most commonly-used method of receiving early warnings is not effective when electricity supply in outer islands is unavailable or when Radio Tuvalu is not 'on air'. These periods when radio broadcasts are not available amount to more than 12 hours per day.

The newly built radio production studio established with support from JICA currently runs on a single mains power source without any standby power source being available in the event of a mains power failure. It is most likely that there will be power outages during local flooding caused by a severe cyclone as the feeder cables and infrastructure are subject to failure caused by inundation. At present the transmission of actual warnings from Radio Tuvalu is currently possible only from the Radio Tuvalu studio, which is in different premises from the Emergency Operation Center (EOC). This means that during an extreme weather event, officers in the EOC would need to move between Radio Tuvalu and the EOC to broadcast emergency warnings, causing unnecessary time lags which can make information not useful not to mention increasing risks to personnel in disseminating information.

Satellite and landline Phones Limitations

Apart from the AM radio, satellite phones are the only alternative method of channelling information between Funafuti and the outer islands as physical wire landlines are used only within islands. Another 40% of respondents to the Baseline Survey reported that they use satellite phones (and then subsequently in-island landlines) as the main method of receiving early warning of extreme events. This method has proven unreliable due to power supply problems on the outer islands. The outer island satellite phones are not normally activated until an emergency arises. The satellite phones are usually stored in a safe location until a warning is received through radio. Moreover, the current satellite phones can normally receive satellite signals only outside a building due to their use of a small inbuilt antenna and this makes it very difficult to use during severe weather events where the user would need to go outside in a cyclone.

Meteorological Communications Limitations

Given the fact that 80% of Pacific disasters are weather related, the meteorological office plays a key role in any disaster situation involving weather. To develop accurate regional forecast models it is essential that current weather data such as wind speed and direction, atmospheric pressure, temperature, rainfall, cloud cover and others be obtained regularly from as many observation locations as possible. This then needs to be relayed quickly to the global meteorological communications network for inclusion in the current models which are generated by regional processing centers. It is then returned to each meteorological service in the form of forecast models and other information to develop their own local forecasts and warnings. Each missing observation reduces the accuracy of the forecasts so it is essential to have reliable two-way communication links to pass this information in a timely way. In Tuvalu, the Meteorology Department based in Funafuti has relatively well-established information exchange channels with regional processing centres in Hawaii and New Zealand. However, the challenge is to transmit relevant information from the three meteorological observing stations back to Funafuti as the current HF

[24] See question 145 in Annex 6

[25] "Mains power" is a common terminology for grid electricity supply

communications systems between them are old and unreliable. Due to system power supply limitations in outer islands, it is only available when the outer island stations call Funafuti, limiting the two-way continuous communications. To compound matters, the Meteorological Office does not have any backup mains power supply which will hinder its operation in the event of severe weather events or the disconnection of mains power as a result of potential flooding of the underground power lines.

Inadequate Community Outreach Programs

In recent history, Tuvalu was hit by two large cyclones: one in 1972 (cyclone Bebe) and another in 1997 (Cyclone Keli). Although the both cyclones flattened almost all built structures on the hardest hit island, no human casualties were reported. This shows the inherent resilience of these island communities to extreme events that they have developed over centuries, besides some luck factors such as, during its most intensive phase Cyclone Bebe passed Tuvalu during the low-tide and the overtopping that did occur occurred during a more subdued phase of the disaster.

The DMO and Tuvalu Red Cross, in collaboration with Island Disaster Committees, undertake a number of awareness raising training and events to enhance community preparedness to weather and non-weather related disasters. This includes training of emergency response teams and volunteers for disaster management and response, logistical training to manage relief stocks, issuing brochures on cyclone preparedness and mock drill exercises on the International Day for Disaster Risk Reduction. However, outreach of these programmes is severely hampered by logistical challenges. Most of them are conducted only via media (radio) programmes and distribution of brochures, and rarely do island communities and Island Disaster Committee members participate in face-to-face training or drills. When staff from Funafuti visit outer islands on a scheduled boat, they usually have only an hour or two to carry out such activities due to the constraints of the vessel schedule. While distribution of brochures is an inexpensive option, the effectiveness of these measures is questionable as the lack of funding within DMO or Red Cross prevents translating existing materials produced by other regional agencies, such as the SPC, into Tuvaluan and they often use English-based materials. Through the new 'Coping with Climate Change in the Pacific Island Region' (CCCPIR) programme, SPC/GIZ is putting in place two officers within DoE to assist facilitating intergovernmental collaborations and organize awareness raising workshops, events and trainings, which cover DRM related issues.

Disaster Plan Limitations

Tuvalu currently has two documents that are relevant for enhancing its disaster preparedness; namely the National Disaster Management Plan (NDMP 2011) and the National Strategic Action Plan for Climate Change and Disaster Risk Management (2012-2016) (the "SNAP"). These documents set out institutional arrangements and responsibilities for disaster risk reduction in general and for disaster contingency in particular. The latter provides an overarching strategy for the country with regards to DRM and climate change and has been developed in alignment with TK-II and National Climate Change Policy. While the National Disaster Plan provides extensive background material, it lacks a simple and clear-cut path of who is responsible for rapid dissemination of warnings and related information to the general public. It overly relies on committee meetings and a long chain of command which will be difficult to implement quickly in the event of a rapidly approaching potential disaster. The SPC SOPAC Division, which assisted the formulation of SNAP, is currently formulating a new DRR programme with funding from 10th EU EFD which is likely to include a revision of NDMP in alignment with SNAP to streamline institutional arrangements and responsibilities.

Adaptation alternatives: Building on recent policy and infrastructural development in the DRM sector, the LDCF resources will be invested, under this Component, to increase capacity of the entire nation to better prepare for increasing intensity of tropical cyclones projected in a changing climate. Additional investments in the DRM sector are imperative as the available climate change projection points to increasing intensity of tropical cyclones in the future (although the frequency may decline), and more coordinated, efficient, effective and sustained measures for enhancing preparedness and response will be critical. Acknowledging acute human capacity constraints within the Government compounded by logistical challenges, activities in this Component will engage appropriate NGOs with demonstrated capacity and experience in working on DRM in the Outer Islands as a service provider. At the same time,

the Implementing Partner (the Department of Environment) will work closely with the SPC SOPAC Division who has a track record in supporting DMO in the policy areas so that increased infrastructural and human resource capacity achieved by the LDCF investments will be supported by an overarching policy and institutional framework of NDMP and SNAP that SOPAC will be assisting with. The LDCF resources will be invested in two interrelated areas.

First, the LDCF resources will be invested in enhancing existing communication facilities and providing additional systems to ensure that multiple, reliable warning systems are in place to ensure that outer island communities are warned of impending extreme weather events. Second, investments will be made for building awareness and capacity especially among outer island community members to ensure they are fully prepared to reap benefits from the enhanced communication facilities such as early warning messages.

As these two interrelated elements are implemented concurrently in the proposed LDCF project, and the project works closely with the SPC SOPAC Division which intends to support improvement of disaster response institutional arrangements, it is expected that climate risk information is disseminated to all citizens faster, more accurately and more reliably and response actions undertaken more effectively as a result.

Given the significant capacity constraints in the Disaster Management Office (see Annex 7), the work related to community outreach and construction/installation of DRM-related infrastructure will be implemented through NGO networks with proven experience and active networks in Outer Island Communities, while the Department of Environment, who is the custodian of the SNAP, is responsible for the overall delivery of the Outputs and Outcome. .

The enhancement of the communication facilities will be undertaken in the first two years of the project implementation to ensure that communities will have maximum time to observe and benefit from them during the course of the project. Community outreach, mock drills and discussions with respect to increasing climate risks within the context of island development planning (Component 3) are expected to increase the ownership and subsequent budgeting of available discretionary resources for the continued operations and maintenance of the infrastructure and equipment.

Output 2.1 Each island is equipped with robust communication facilities and early warning system

LDCF resources will be used to put in place a set of reliable communications equipment for climate disaster warnings. Some will be in the form of enhancing the existing system while others will be an introduction of additional systems. Investments in these multiple areas are needed as the existing systems (landlines and satellite phones, HF system and AM radio) are all susceptible to failure and a total failure is not unlikely unless additional redundancies are introduced. In particular, the investment will be categorized into the following three areas:

- **Improving radio broadcasting at the source and improving reception at the household level**
  While the AM radio established by JICA improves the inter-island one way communications (from Funafuti to the Outer Islands) and reduces the chances of failure, the delivery of timely warning is constrained by the dependence of the system (both at broadcasting source and reception side) on the mains power supply being available. The current practice in Tuvalu is to disconnect mains power to any location that could be in danger of flooding during a severe weather event, and this could include the Radio Tuvalu Studio, just when they need to be informing the Outer Islands about an emergency situation. The LDCF resources will finance additional costs of introducing greater resilience in the public communication system by providing an emergency power source for Radio Funafuti studio and solar powered radios for each household in the outer islands, and the three small inhabited islands in the Funafuti Atoll (approximately 1,250 households all

together). The project resources will also be invested in a standby diesel generator set large enough (around 30 KVA) to provide for the operation of the studio facilities during any power outages or power disconnections as a result of a severe storm and potential flooding of the power supply infrastructure on Funafuti. This will help to ensure that Radio Tuvalu transmissions are as reliable as possible, especially in the lead up to, and during, an extreme event. It is normal practice for Radio Tuvalu to commence 24-hour operation when an emergency situation arises as long as electricity supplies remain available in Funafuti. To further enhance the capacity to continuously disseminate critical information in a timely manner, the LDCF resources will be invested in Funafuti to provide a portable transmission console for emergency use within the EOC or other location that may be needed as the situation changes. These measures, implemented together, will enable continuous radio transmission and reception during an extreme event ensuring that critical information reaches to every household in the country.

- **Improving two-way communications**
  Effective disaster risk management and early response require a robust real time, two-way communication channels as well. The satellite phones, which are available on each island, currently receive signals only when used outdoors which practically limits them from being of use to ensure communications with Funafuti during severe storms. The LDCF resources will therefore be invested in establishing fixed and portable external antennas for the existing satellite phones. With this investment, the satellite phones can be stored in a safe location during normal times and moved to the evacuation shelter (a church or school) equipped with suitable external antennas during an extreme weather event enabling the island disaster committee and Kaupules to be in touch with the central agency located in Funafuti. At the same time, the HF system at the Meteorology Office (both in Funafuti and three outer island observing stations) will be upgraded with backup power sources to ensure real-time reporting of changing weather parameters in the lead up to hydro-meteorological extreme events and enhance the overall accuracy of the warnings.

- **Establishment of a simple, low-cost independent alerting system**
  To ensure a fail-safe communication channel in Tuvalu, an additional satellite SMS-based messaging system will be installed in all islands as well as within the EOC office and meteorological office in Funafuti. Since the costs of operation is significantly lower than that for a satellite phone as it is an SMS-based system, and it operates independently from the local telecom network, it provides a secure alerting system when other facilities are unavailable (e.g. outside normal Radio Tuvalu broadcasting hours, or when the landline or satellite phones become unavailable). Such a system is gradually being adopted in many other countries in the region which struggle with high vulnerability to extreme weather conditions and geographical challenges at the same time[26]. A typical model operates on both mains power with a backup solar-powered battery and has an external warning siren that can be set off remotely. (e.g. from the EOC in Funafuti) to attract immediate attention.

Installation of the equipment described under item 1, 2 and 3 will be carried out by Tuvalu Meteorological Department and Radio Tuvalu who have experience with the type of equipment proposed and they will also provide training sessions for other stakeholders for use and maintenance. A short term consultant will be recruited to supervise these activities. The operating procedures at the time of emergency as well as periodic testing for the new or upgraded facilities will be reflected in the revised operating procedures for NDMO, which will be addressed by the SOPAC co-financed project.

Output 2.2 Raised awareness and preparedness of outer island communities for climate-induced extreme events

[26] Countries that have adopted an SMS-based early warning system include Cook Islands, Tonga, Vanuatu, Samoa, American Samoa, Solomon Islands, FSM, Commonwealth of the Northern Mariana Islands. Palau, Marshall Islands, Hawaii, Guam, and Niue.

Community awareness, outreach and education programs in the Tuvaluan language are an essential part of any disaster risk strategy to ensure that island people understand the implications of severe weather and other hazards and are adequately informed about precautions necessary before and during an event, and what to do after the event. In this regard, the LDCF project will produce Tuvaluan awareness raising materials, undertake participatory drills to test enhanced communication equipment and go through the emergency evacuation protocols, and work with the Department of Education to include disaster-related curriculum in school activities.

Similar to Component 1 focusing on climate resilient marine-based livelihood practices, regional organizations such as the SPC SOPAC Division and SPREP have published a number of relevant outreach materials on extreme events and disaster preparedness that have been tailored, through over 15 years of their production, to a range of target audiences appropriate to island settings. LDCF resources will be used to translate these materials into Tuvaluan and use appropriate NGO networks to carry out face-to-face awareness raising campaigns in each island. Moreover, the project resources will be used to produce additional materials that support implementation of SNAP and dissemination of improved NDMP protocols and procedures. As a minimum, the project will produce and translate four such awareness raising materials during the course of the project implementation. This will be supplemented by development of a radio programme which will capture these additional measures that are invested by the LDCF resources.

LDCF resources will fund the development of suitable course modules covering climate-induced hydro-meteorological disasters for the upper primary and secondary school students. The Department of Education will develop a curriculum and associated materials on disaster preparedness, existing protocols and measures the Government of Tuvalu has put in place, including those supported with LDCF resources (the details of the modules will be developed during the implementation phase). Once a curriculum is developed, staff from the Department will visit outer islands to train teachers to ensure embedding into the school curriculum.

Lastly, once the communication equipment (Output 2.1) is installed in the first two years of the project, the project will organize at least two mock drills which will use all the equipment that will be delivered by the project. This will include the triggering of the alarm from the Funafuti-based EOC, SMS warning messages, use of AM radio on generator and reception checks with individual solar powered radio, and testing of satellite phones. This will be followed by evacuation exercise in each island. The status of equipment, issues, and the number of participants will be recorded. Most likely, such an event will be organized on the International Day of Disaster Risk Reduction.

All of these activities will closely involve the CCCPIR officers in the DoE, who will also sit in the project steering committee so that lessons can be captured and disseminated by these officers according to their mandate.

Table 5 Summary of main project activities for Component 2

Output 2.1 Each island is equipped with robust communication facilities and early warning system

Indicative activities

2.1.1. Procurement and installation of improved warnings systems. This will include solar powered radio units (to be distributed to each household in outer islands); 40 KVA diesel powered generator; a portable broadcast console and accessories for Radio Tuvalu; SMS-based communication system with solar panels (15 in number); 20 external antennas for iridium satellite phones; HF system upgrades; and construction of a generator shelter.

2.1.2. Organize technical training sessions for Tuvalu Meteorological Department and Radio Tuvalu for installation, use and maintenance of the communication equipment. A short-term international consultant will be hired for this purpose.

2.1.3. Organize a monitoring visit in year 3 to observe and fix technical issues, if any, with the equipment. This will be carried out by engineers in Tuvalu Meteorological Office and/or Radio Tuvalu.

2.1.4. Organize a refresher training session for Tuvalu Meteorological Services and Radio Tuvalu for use and maintenance of the communication equipment

2.1.5. Establish a system to monitor the use and log issues with equipment. The PMU will work with Radio Tuvalu, DMO, appropriate NGOs, and Island Disaster Committee for respective equipment that each of these stakeholders will be responsible for.

2.1.6. Facilitate dialogue and working groups comprising of DoE, DMO, the SPC SOPAC Division and to integrate the new communication infrastructure, financed by LDCF, into the revision process of the NDMP protocol. This forum will also be used to identify appropriate awareness raising materials (see Activity 2.2.2 below) reflecting SOPAC's work on the NDMP revision.

Output 2.2 Raised awareness and preparedness of outer island communities for climate-induced extreme events

Indicative activities

2.1.1 Translate at least two existing materials on disaster preparedness produced by SOPAC/SPC/SPREP into Tuvaluan language. The project will recruit a national consultant to undertake this task.

2.2.2. Produce at least two awareness raising materials focusing on improved early warning dissemination protocols defined by the National Disaster Management Plan. The PMU will coordinate with the SPC SOPAC Division that will be working with DMO to revise the NDMP starting from 2013.

2.2.3. Establish a school module the upper primary and secondary school. An international consultant will be recruited to work with the Department of Education. Once the module is established, staff from the Department will visit outer islands to undertake necessary training targeting teachers in respective islands.

2.2.4. Develop a radio programme covering the activities undertaken in the project. This will include general awareness raising about hydro-meteorological disasters and more specific communication protocols and evacuation procedures. The PMU will work with Radio Tuvalu, DMO and appropriate NGOs to develop a programme that will be broadcast throughout the course of the project.

2.2.5. Organize at least two mock drill exercises in the last two years of the project. The event will be coordinated by the PMU and involve, at the capital, DMO, appropriate NGOs, Department of Environment and other relevant stakeholders, and at the outer island level, coordination will be supported by appropriate NGOs staff and volunteers in respective islands.

OUTCOME 3: Enhanced capacity of communities to access internal/external financing for community-based climate change adaptation through existing participatory development planning processes

Co-financing amounts for Outcome 3:

Government of Tuvalu:	$ 5,896,373
Falekaupule Trust Fund:	$ 1,243,524
UNDP:	$ 911,190
(Total co-financing:	$ 8,025,897)

LDCF project grant requested: $ 500,000

Baseline (without LDCF intervention): Consisting of nine islands hundreds of kilometres away, strengthening the capacity of outer island administrations for identification of community development needs and improved service delivery has been an important focus of Tuvalu's social and economic development. The Falekaupule Act (FA) provides the legal underpinnings for the current decentralization process and ushered in the current two-tiered governance system. Strengthening local governance is explicitly featured in the current national strategic plan – TK-II, as well as high-level Tuvalu Climate Change Policy and the National Strategic Action Plan for Climate Change and Disaster Risk Management (SNAP). The FA gave rise to Falekaupule (island level assembly) and Kaupule (executive arm of

Falekaupule) to carry out island level administration and development in general. The FA outlines the composition, meetings and proceedings, functions of, by-laws, financial provisions and audit, community development tax, officers and staff of and legal provisions of the Kaupule. The FA stipulates *Kaupules* to carry out the following functions:

- to prepare and implement development plans and programmes in consultation with the community, government agencies, non-government organizations and other development partners;
- to coordinate and monitor all programs and projects implemented within its area of authority;
- to seek technical advice on policy and project development in accordance with its plans and programs; and
- to ensure the proper management and use of the physical and natural resources in the *Falekaupule* area.

This, in principle, provides legislative underpinnings for *Kaupules* to produce and annually review a multi-year Island Strategic Plan (ISP) and the production of an annual budget derived from the ISP. The implementation support and technical assistance are envisaged to continue to originate from the capital. To respond to this aspiration of the Government, most notably two complementary initiatives have been in place. First is the UNDP-assisted Support to Local Governance (SLG) Project in two phases (2005-2009 and 2010- ongoing) while the other is the Commonwealth Local Governance Pacific Project implemented by the Commonwealth Local Governance Forum (CLGF). SLG, over the last seven years of implementation, focused on building institutional and human capacity for participatory ISP planning and budgeting, greater alignment of ISPs with TK-II, and improving data availability as a planning and decision making tool. CLGF on the other hand has been providing support, through a Strategic Planning Training of Trainers, for the formulation of ISPs. As a result of these support, the status of ISPs (as of December 2012) stands as follows:

Island	ISP and title	Planning Horizon	Incorporate Climate Risks[27]	Endorsed by Kaupule/ Falekaupule
Funafuti	Funafuti Strategic Plan 2011-2015, Moeakiga o Malefatufga	2011-2015	Not significantly	Y
Nanumea[28]	Palani mo Nanumea mo te Tauhaga 2010 - 2012	2010-2012	None	Y
Nukufetau	Alatuu Ki te Kaufata mo nukufetau 2010 -2020	2010-2020	None	Y
Vaitupu[29]	In Progress			
Niutao/ Niulakita	Te Lagai Fakaola Fenua o Niutao mo Niulakita 2012-2016	2012-2016	Unable to verify during PPG	Y
Nanumauga	Nanumauga Island Strategic Plan 2011-2015, Hologa o Kakenga	2011-2015	Not significantly	Y
Nukulaelae[30]	In Progress			
Nui[31]	In Progress			

[27] This is based on a scale of 1= Minimal, 2 = not significantly, 3 = significantly, 4 = comprehensively

[28] *Nanumea* will be convening a Forum in December 2012 to deliberate on a new strategic plan for the next 5 or 10 years. The Forum will be facilitated by a number of *Nanumea* people currently working in various Regional Organizations

[29] Consultations with community groups have been undertaken. The taskforce is currently finalizing the drafting of the text. The draft will be tabled to the *Falekaupule* for final approval.

[30] Draft text has been completed as of August 2012. This is yet to be formally endorsed by the *Falekaupule*.

[31] Taskforce has been appointed to kick start the process. They are planning to have the community consultations coincide with the next SLG II visit to Nui Island

It is expected that the remaining three islands will have formulated, with CLGF support, their ISPs by April 2013. An important area of SLG support that complements that of CLGF is the formulation of Island Profiles. These profiles are comprehensive and include information such as physical formation and geography, population, social status, economic system, household status, water, sanitation, island structure and governance, infrastructure and development and general environmental conditions (but not specifically to climate change). Examples of visual presentations of in-migration movement (from the Nukufetau Island Profile 2011) and population density (from the Funafuti Island Profile 2011) are shown in Figure 6 below. Island profiles of all islands of Tuvalu are expected to complete in 2013.

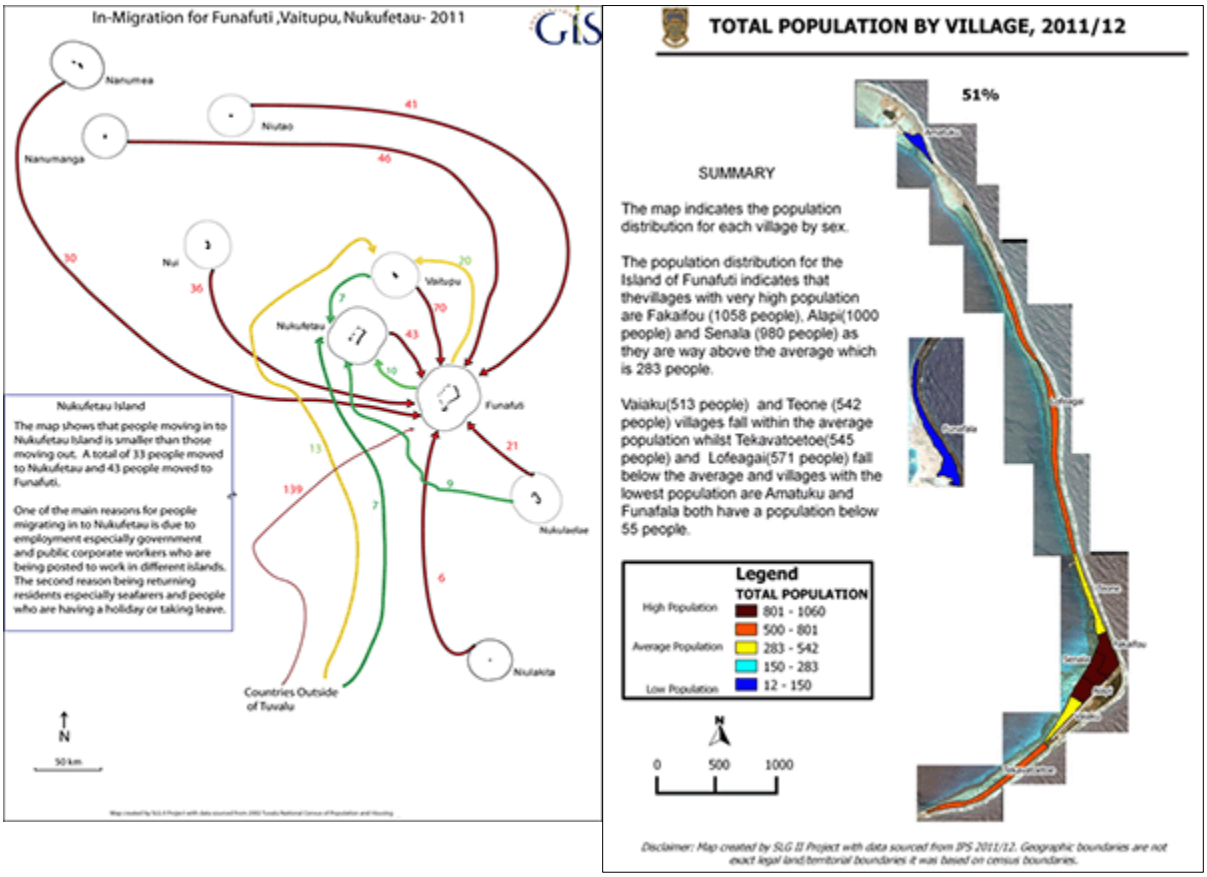

Figure 6 In-migration movement (from the Nukufetau Island Profile 2011) and population density (from the Funafuti Island Profile 2011) (Source: SLG, II)

Another important area of SLG support is the amendment of the FA to explicitly state participation of women and youth in the ISP development process. The revised Act is expected to be endorsed by the Parliament in 2013. Both SLG and CLGF are expected to continue until the end of 2013, and beyond 2013, the efforts for greater devolution of authority will be fully nationalized with the Department of Rural Development (DRD) taking over its assistance to *Kaupules* in ISP formulation, use of Island Profiles, annual planning and basic capacity building.

While the ISP is perceived as an overarching development vision for the island, Capital Investment Plans (CIPs) are an operational document that translates the vision in the ISP into more concrete investment activities. As reported by the DRD, “for the islands that have completed their Island Strategic Plans, it will

be necessary to have a tool that links the Island Strategic Plans to the Island budgets. The Department of Rural Development… advocates for the formulation of Capital Investment Plans which will link the Island Strategic Plans to the Islands Budgets, Vaitupu currently has a Capital Investment Plan" (Tuvalu 2011a). The vision for the capital investment plans is to create a 3-year rolling plan updated annually which links the ISPs to the annual planning and budgeting process. Although CIPs are a critical supplementary tool to guide development investments in the islands, the progress of CIP development is limited which in turn limits the effective use of available island budgets.

In parallel to the administrative reform process, the financial landscape for meeting development needs of outer islands has been changing to bolster devolution of authority to *Kaupules*. Currently, there are largely three sources of revenues for outer island administrations: 1) core revenues; 2) grants and subsidies; and 3) *Falekaupule* Trust Fund distribution (See Table 6 below which shows the most recently available budget outlay for outer islands). Grants and subsidies include Special Development Expenditures (SDEs) and Block Grants which respectively support financing island-level capital investments and administrative expenses for running *Kaupules*. The *Falekaupule* Trust Fund was created in 1999, in parallel with the FA, to assist in implementing priority community development needs. From 2001-2012, the distributions to the eight islands amounts to US$5.9 million with the funds balance as of 30 June 2011 of US$23.8 million.

Table 6 Budget analysis of outlays for outer islands

	Nanumea	Nanumaga	Niutao	Nui	Vaitupu	Nukufetau	Funafuti	Nukulaelae
Revenue								
Core Revenue	44,464.00	84,608.71	68,349.00	150,478.00	116,358.00	32,612.00	335,450.00	72,036.00
Grants and Subsidies	80,312.00	88,348.64	96,371.00	63,552.00	78,545.00	65,746.50	348,764.00	42,791.50
FTF Distribution	69,277.00	62,415.73	67,828.00	48,083.00	71,129.00	63,603.05	61,601.00	54,104.44
A. Total Revenue	**194,053.00**	**235,373.08**	**232,548.00**	**262,113.00**	**266,032.00**	**161,961.55**	**745,815.00**	**168,931.94**
Expenditure								
Recurrent Expenditure	124,776.00	189,499.60	184,417.00	194,107.00	190,812.00	118,810.00	419,073.00	119,800.50
Capital Expenditure	205,277.00	45,853.00	58,350.00	60,484.00	75,220.00	63,922.00	378,880.00	107,000.00
B. TotalExpenditure	**330,053.00**	**235,352.60**	**242,767.00**	**254,591.00**	**266,032.00**	**182,732.00**	**797,953.00**	**226,800.50**
C. Surplus/Deficit (A-B)	**-136,000.00**	**20.48**	**-10,219.00**	**7,522.00**	**0.00**	**-20,770.45**	**-52,138.00**	**-57,868.56**

Currently available financial resources, coupled with elements of TA support to *Kaupules*, in terms of capacity for ISP formulation and financial management, represents a critical baseline for Tuvalu. The continuing support to *Kaupules* is expected to be carried on by the Government, especially by the Department of Rural Development, after the end of SLG project. It is important to note that there is strong awareness (and desire) amongst community members and the government that ISPs will ultimately act as a guiding tool for allocating existing development resources such as SDE, FTF, core revenues and donor financing. The ISP from Nanumaga succinctly puts it that "the people at the grassroots level are opportune to develop their own ISP 2011 – 2015, with the highest hope to receive positive responses to their identified needs from various donors."

At the same time, despite these elements of on-going support to outer island administrations extended by the Government as well as donor-funded initiatives, the level of mainstreaming climate change risks into ISP is extremely limited. A review undertaken during PPG identified that the Funafuti ISP and Nanumaga ISP are the only ISPs (out of five completed to date) that have some references to climate change, but the Funafuti ISP is the only one with broad action plans with budgets assigned to them. This means that either climate risks are not at all mainstreamed into the most fundamental development framework for outer islands or the level of specificity of ISPs, in terms of investment gaps, action required, and necessary budget, is not sufficient for them to act as a guiding tool to effectively combine, sequence and allocate available financial resources to meet climate change adaptation targets. As a result, development activities in outer islands, if at all, are primarily driven by central ministries financed by external donors, rather than outer island communities playing the central role in guiding how these external resources should be spent in line with locally-produced development priorities.

Adaptation alternative: The primary focus of this Component is to enhance the capacity of outer island communities to mainstream climate change considerations into the development planning and budgeting process so that future influx of adaptation finance can be effectively guided by the communities themselves. This will be supplemented by support to enhance the capacity of community members to monitor, verify and report the progress of mainstreaming and effective execution of priority activities. More specifically, with the recognition that the ISP is the guiding framework to direct available development finance including SDE, FTF and core revenues to locally-relevant development priorities, the LDCF resources will be invested to revise all ISPs in line with their planning horizon to integrate climate change adaptation considerations. This process will build upon the work undertaken by SLG and CLGF to date which initiated the ISP process, the development of Island Profiles, and building capacities among *Kaupule* members for participatory development process. As an integral element of climate change mainstreaming, the LDCF resources will further be used to translate the long-term ISP plans into the annual island level development budgets.

A number of targeted actions are proposed to develop an integrated approach for improving community access to and effective use of climate finance. Through the integration of climate change into ISPs, and annual budget planning, communities will be able to cost and prioritise their adaptation options with full understanding of the trade-offs in developing plans that include climate change. From the island survey, it was indicated that 73% of respondents thought that incorporation of climate risk in the development of new or revision of old ISPs would be useful. This process will build capacity to understand the ramifications of climate change for planning and budgeting at the island level. This will ultimately lead to the community developing adaptive management approaches that can respond to climate change within the project's lifetime and develop a sustainable process to respond to long term CC through the on-going ISP process. At the same time, this Component envisages strengthening the capacity of local community members as the first and most critical custodian of the use of domestic resources (and additional climate finance in the future). This will be supplemented by an assessment that looks in details at the current climate expenditures at the national and outer island levels so that the findings inform the process of climate change mainstreaming into ISPs and annual budgeting process.

It is important to note that the substantial synergies are expected between this Component and the other two Components of this project. This is because the close engagement of community members and Kaupules in the implementation of specific adaptation actions focusing on fisheries and DRM will help them observe first-hand specific adaptation gaps, additional technical and financial needs for maintaining the impacts of investments from Outcome 1 and 2, and successes/failures. This learning is expected to directly feed into the participatory ISP revision and annual budgeting dialogue supported under this Component. Sustainability of the investments, which is a common challenge observed over many years of donor assistance, is likely to be augmented as this Outcome aims at introducing climate resilience into the way in which domestically available resources are budgeted and executed in the future.

Output 3.1 All outer Island Strategic Plans and annual budgets integrate island-specific climate risks through existing gender-sensitive, participatory processes

By building on the work undertaken to date to support the ISP process, the LDCF resources will be invested to assist *Kaupules* to integrate climate change adaptation into the most fundamental development plans for outer islands. It is recognized that Kaupules and communities need continuous support in various areas of climate change mainstreaming process into ISPs. Thus the project will recruit an Island Strategic Planning Officer and Community Support Officer, both located within the DRD. This will enable at least several months of collaborative work with the SLG project team so that continuity is ensured.

At the early phase of the project implementation, the implementing partner will organize and conduct a training of trainers workshop in Funafuti for key members of Kaupules and Falekaupules from all islands to initiate the mainstreaming process. A toolkit for climate change mainstreaming will be used based on

existing materials and/or created to meet needs that are specific to Tuvalu. Island-level vulnerability assessments undertaken by the first NAPA follow-up project, as well as Funafuti-level water assessment undertaken by the PACC project, will be fully incorporated into the training and toolkit. These trainers are expected to go back to their respective islands and commence the mainstreaming work of finalizing the ISP building on participatory, gender-sensitive dialogue process that has been supported by SLG. This will be supplemented by the periodic visits of the ISP Officer and Community Support Officer to the islands.

Kaupules are at different stages in their ISP 'cycle' – some *Kaupule* have only recently completed their ISPs, or plan to finish in coming months with support from the CLGF, while other *Kaupules* have completed ISPs and will be revising their ISPs during the life of the Project. The specific timing of the island visits by the ISP Officer and Community Support Officer will be staggered to align the revision process with the respective status of the ISP.

Integral to climate change mainstreaming into the ISP process, the LDCF resources will also be used to support Kaupules/Falekaupules in enhancing/developing annual budget formulation. Consultations during the preparatory phase for this initiative confirmed a view that it is critical that the annual budgeting process is improved in order to reap benefits from the improved, climate-mainstreamed ISPs, but in reality, each island is in different status in terms of preparing annual budgets (and invariably all lack capacity for carrying out this task). Trainings and workshops aiming at mainstreaming climate risks will also be used to enhance the skills of outer island administrations for identifying specific adaptation priority actions, in line with the ISP, prioritizing and budgeting them in line the available resource envelope from SDE, FTF and core revenues in the short- to medium-run, but to attract and guide external finance in the long-run.

The annual budgets that are developed will be compiled and analyzed by the project-funded ISP Officer and will be reported to all outer islands and DRD in soft-copy as well as at the workshops (both at outer islands and in Funafuti) envisioned in this Output and Output 1.3. This will present an important iterative learning opportunity for Kaupules and the project team to assess the extent of progress in improving the budgeting process and to facilitate cross-learning among different island administrations.

Output 3.2 Capacity of Kaupules, Falekaupules and community members for monitoring adaptation investments strengthened

LDCF resources will also be used to strengthen the capacity of both outer island administrations and community members for monitoring, reporting and verifying the progress of adaptation investments. In outer island communities, where upward and downward accountability, to the central government and to citizens respectively, can easily be diluted, it is critical to nurture the sense of oversight among community members. At the same time, outer island administrations also need to develop their capacity to report the use of resources and progress of investments to their constituents.

During the first Training of Trainer event under Output 3.1, the concept of a community-level dialogue platform will be introduced and subsequently those participating in the ToT are expected to establish such a platform under the agreement of the island Kaupule and Falekaupule, with support from the ISP Officer and Community Support Officer. Emphasis will be placed, during the initial establishment of this platform to ensure broad community inclusion, including women and youth, and targeting potentially margilazed groups and minorities. Subsequently, during each periodic visit of the ISP Officer and Community Support Officer (which is scheduled to take place at least every 12 months), they will facilitate a workshop targeting Kaupule members on reporting of budget use on climate resilient investments in line with the agreed annual budget and ISP[32]. On the other hand, the island visits will also be used to raise awareness of community members to monitor and verify the reports from the administrations.

[32] In the first years of the project implementation, where available resources of SDE, FTF and core revenues are not

To assist the process of increasing capacity for monitoring, and ultimately accountability, two specific tools will be introduced. First is a community scorecard where selected representatives from various interest groups such as women, youth, minorities, the disaster management committee, fisher's association, and Red Cross volunteers, assess performance of outer island administrations in terms of the use of island resources for the agreed purposes as outlined in the annual budget and ISP. This scorecard will be a simple questionnaire and entails criteria such as "completion of proposed projects", "level of beneficiary engagement" and "targeting of proposed beneficiaries". The specific reporting format will be determined in the first consultation, both at outer islands and Funafuti, during the inception phase of the project. The information from the scorecard will be compiled by the ISP Officer and reported along with the annual budget report (see Output 3.1). Secondly, the LDCF resources will be used to introduce a participatory video tool. This tool has been tested in Samoa to enhance the accountability and information exchange of community-based climate change small grant projects. A national level ToT (separate from that envisaged under Output 3.1) in Funafuti will train community members, most likely members of women's association, to use a camcorder, develop a story-board, record their planned approach and edit their video to present their message. As such, each island community will be given a camcorder to visually record the progress of the investments. During the regular monitoring visits, the data will be collected by the PMU. This tool will also be used to monitor and report the progress of Component 1 and 2. The compilation of the videos from all islands will be shown at the Annual Event (supported under Outcome 1) which will serve the purpose of information exchange and maintaining interests from community members.

Output 3.3 National and outer island capacity to leverage, sequence and combine domestic resource for climate change adaptation investments strengthened

Explicitly building on Output 3.1 and 3.2, this Output will enhance the national and outer island capacity to leverage available domestic, and potentially future external, resources for climate resilience building investments in line with the priorities identified in ISPs. As described in the baseline section above, despite the significant level of vulnerability of outer islands to climate risks, the actual investments on concrete adaptation measures in outer islands is highly limited and none of the ongoing donor-funded adaptation initiatives uses the ISPs as a guiding tool for determining the type and level of investments. In the future, Tuvalu as a whole is expected to access greater volume of climate funds from various sources, in addition to the currently available domestic resources (i.e. SDE, FTF and core revenues), and it is critical that both the national and outer island capacity are sufficiently developed so that the latter can guide the investments on the ground while the former continues to provide various technical support. To this end, the LDCF resources will be used to facilitate the investments of existing domestic resources for achieving adaptation benefits especially in the areas of, but not limited to, fisheries and DRM.

Unlike many other countries where annual "budgeting" of priority actions at sub-national level almost automatically ensures execution of such actions, in Tuvalu, where technical expertise needs to be sourced from the capital, there needs to be an additional step in place in which technical line agencies are made aware of the required actions in the outer islands. Despite ongoing support from SLG and CLGF, this process of matching outer island action plans and availability of technical expertise from the capital has been almost absent in Tuvalu to date, and for this reason, outer islands often end up using available resources to execute only *something they can do themselves*, undermining the spirit of island-level strategic actions outlined in the ISPs. The project will establish an annual discussion forum in the capital to invite representatives from line agencies as well as resident representatives from all islands based in Funafuti to review the priority actions as developed in outputs 3.1 and agree on sourcing of technical/execution support from line agencies.

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yet leveraged for resilience building investments, they will use activities promoted in Component 1 and 2 as a real life example. As the ISPs integrate climate risks and annual budget for climate resilience building are formulated along with the project implementation, the focus of the reporting will shift towards the use of domestic resources.

The project implementation infrastructure envisaged in this LDCF project, with two full-time project staff based in DRD and scheduled outer island visits, is well placed to facilitate this. In parallel to the implementation of the fisheries and DRM related components, the project staff, especially the ISP officer and Community Support Officer, will make periodic visits to islands during the important phases of the ISP formulation and annual budget discussion to promote financing of adaptation activities from SDE, FTF and core revenues. Various events that are designed to promote information sharing about the adaptation effectiveness of investments in Component 1 and 2, such as annual events to demonstrate traditional canoe designs and food preservation techniques and mock drills on the National Disaster Risk Reduction Day, are expected to provide additional impetus to achieve this Output, as outlined in the Stakeholder Engagement Plan (Section 2.8). On the other hand, at the capital, the ISP Officer supported by the Chief Technical Advisor recruited in the project, will facilitate the technical sourcing discussions in the capital by feeding in the information from the ISP formulation and budgeting discussion.

To further facilitate the ability of leveraging domestic resources and external climate funds for adaptive investments, the LDCF resources will be used to undertake an assessment that analyzes the existing domestic expenditures on areas that are vulnerable to climate change. This analysis is critical to achieve this Output because neither the Department of Rural Development, which oversees the development expenditures of outer islands nor the Ministry of Finance has an overall understanding of how the available resources for climate change are currently spent at the national or outer island level. This assessment will produce a comprehensive picture of how financial resources are currently disbursed and what sectors/areas/activities in outer islands receive relatively more or less baseline investments. This assessment will be undertaken during the early phase of the project implementation so that the results will feed into the activities that seek to mainstream climate risks into ISPs and annual budget formulation process. It is important to note that UNDP has an established methodology to undertake this climate expenditure review that has been undertaken in Samoa, Cambodia, Thailand, Nepal and Bangladesh to date.

There is a regional initiative focusing on enhancing climate finance access of Pacific countries which, by closely coordinating with, will produce greater synergies and impacts. Namely, the Pacific Islands Forum Secretariat (PIFS) has recently developed a Pacific Climate Finance Assessment Framework (PCFAF) as directed by the Pacific Leaders Forum and Forum Economic Ministers meetings. The PCFAF, recently tested in Nauru with support from UNDP, guides assessment of Pacific countries' ability to access and manage climate change resources across six interrelated dimensions, namely: Funding Sources; Policies and Plans; Institutions; Public Financial Management and Expenditure; Human Capacity; and Development Effectiveness. The recommendations from the PCFAF enable development of a Climate Finance Action Plan for the country. This Action Plan would outline a series of actions to guide efforts by national government and development partners to improve a country's approach to climate financing (PIFS 2012). It is expected that with improve access to external climate finance supported by PCFAF, and improved capacity at the outer island level to effectively leverage domestic and external climate finance, supported by the LDCF project, the overall capacity of Tuvalu's island communities to identify, combine, sequence and leverage climate financing in the future will be enhanced.

Table 7 Summary of main project activities for Component 3

Output 3.1 All outer Island Strategic Plans integrate island-specific climate risks through existing gender-sensitive, participatory processes
Indicative activities
3.1.1. The level of climate mainstreaming in the current ISPs and Island-level vulnerability assessments undertaken in the first NAPA follow up project are reviewed as well as a water sector assessment by PACC.
3.1.2. National training of trainers (ToT) workshop organized for incorporating climate change risks into ISPs targeting Kaupule representatives, minority groups, DRD staff, NGO staff and women's group representatives. The results from Activity 3.1.1 will feed into this event. The same workshop will also cover skill building for prioritization and budgeting of adaptation action items in an annual budgeting process. This will be linked with the Ministerial annual budgeting process at the end of

March so that the budgets from outer islands are reflected in DRD's annual budget. An international consultant will be hired to deliver the workshop in Funafuti and to develop a toolkit for mainstreaming climate risks into ISPs, and improving budgeting process.

3.1.3. Facilitation of outer island workshops to integrate climate risks into the existing ISP and to produce/enhance annual budgets. Island Planning Officer and Climate Capacity Officer will remain in each island for 2 weeks to initiate and support the process.

3.1.4. Translation of revised ISPs into English/Tuvaluan[33]

3.1.5. Presentation of the revised ISP to outer island communities

3.1.6. Compilation, analysis and reporting of all outer island annual budgets by Island Planning Officer. This report will be shared with all other islands and used in the following year to guide iterative planning and budgeting process. This report will also include results from Activity 3.1.7.

3.1.7. A follow up national dialogue on climate mainstreaming ISP and budgeting process is organized in Year 3 or 4 of the project. The dialogue will be facilitated by an ISP Officer. This platform will also assess and present the monitoring of ISP implementation and budgeting process as well as the use of the gender-sensitive, participatory scorecard (See activity 3.2.5.)

Output 3.2 Capacity of Kaupules, Falekaupules and community members for monitoring adaptation investments strengthened

Indicative activities

3.2.1. Following the national-level ToT in Activity 3.1.2, a broad community-level dialogue platform established in each island including representation from women, youth and minorities for the specific purpose of presenting the progress on climate-resilient investment of resource use in line with the annual budget and ISP.

3.2.2. Outer island level awareness raising workshop organized targeting different interest groups such as women, youth, disaster management committee, fisher's association, and NGOs about monitoring of investment execution.

3.2.3. A national Training of Trainers workshop organized inviting representatives from these interest groups for participatory video. An international expert will be recruited to conduct the ToT.

3.2.4. The gender-sensitive, participatory community scorecard is introduced and carried out once a year in which representatives from communities, covering different interest groups such as women, youth, minorities, disaster management committee, fisher's association, and NGOs, assess performance of outer island administrations in terms of the use of island resources for the agreed purposes as outlined in the annual budget and ISP.

3.2.5. Along with Activity 3.1.7, a national consultation targeting Kaupule, Falekaupule and community members to review the process of annual budgeting, monitoring and evaluation.

Output 3.3 National and outer island capacity to leverage, sequence and combine domestic resource for climate change adaptation investments strengthened

Indicative activities

3.3.1. Establish a national forum in Funafuti for reviewing priority adaptive action plans produced in outer islands. The frequency of the forum will be determined on a need basis, but at a minimum, an annual forum will be organized inviting key line agencies and outer islands representatives resident in Funafuti

3.3.2. Undertake a climate expenditure review assessment at the national and outer island level.

3.3.3. Present the findings from the climate expenditure review. Senior government officials from ministries whose operations relate to climate sensitive sector such as fisheries, agriculture, public works, and health will participate in this event.

3.3.4. Present findings in outer island level on the results from the expenditure review. This workshop will be carried out as part of the periodic visits by the ISP Officer and Community Support Officer.

[33] Some ISPs have been drafted in Tuvaluan, others in English.

2.4. Key indicators, risks and assumptions

Key Indicators

The project indicators rely largely UNDP's "Monitoring and Evaluation Framework for Climate Change Adaptation", and are aligned also with the LDCF Adaptation Monitoring and Assessment Tool (AMAT). The Project Results Framework in Section 3 details indicators, baseline, targets and sources of verification at the Objective and Outcome level. At the level of the Project Objective, the indicators are as follows:

- Take up of climate resilient marine-based livelihood options
- Relevant risk information disseminated to stakeholders
- Outer island communities able to access climate/development funds using climate-mainstreamed ISPs

At the level of the three outcomes, the indicators, risks and assumptions are the following:

Outcome 1: Marine based coastal livelihoods of Tuvaluan outer islands made resilient to declining productivity induced by climate variability and change

Indicators:

- 1.1 Households and communities have more secure access to livelihood assets – disaggregated by gender [AMAT 1.3.1].
- 1.2 The area of Marine Protected Areas (MPAs) or Locally Managed Marine Areas (LMMAs) managed in a climate-resilient manner
- 1.3 The level of awareness about links between improved marine ecosystem management and sustainability and resilience of subsistence marine-based livelihoods

Outcome 2: Capacity of outer islands enhanced to respond to increasing/intensifying climate induced hydro-meteorological risks

Indicators:

- 2.1 Relevant risk information disseminated to stakeholders [AMAT 2.1.1.]

Outcome 3: Enhanced capacity of communities to access internal/external financing for community-based climate change adaptation through existing participatory development planning processes

Indicators:

- 3.1 Climate risks are integrated into the island-level strategic plans
- 3.2 Adaptation actions implemented from island level plans (no. and type) [AMAT 1.1.1]
- 3.3 Presence of community monitoring system

Risks and Assumptions

In line with UNDP project risk management practices a Risk Log has been prepared that provides information on project risks and their mitigation actions (see Annex 8).

The first risk that potentially affects the achievement of the project objective is severe local capacity constraints. Limited number of government officers, compounded by frequent overseas travels that they engage in, poses a difficulty in ensuring continuity of support from relevant government agencies involved. While this is beyond the control of the project to a certain extent, the implementation arrangement and staffing for the project were developed to mitigate this risk to the extent possible. First, the support structure of this project is underpinned by a formal agreement between DoE and DoF, and DoE and DRD (See Annex 15). In this agreement, DoF and DRD, acting as a responsible party to DoE, have agreed to assign a dedicated senior government officer as the focal point for project activity (supported by an alternate). This will

avoid commonly observed situations in which numerous officers attending project technical meetings and board meetings and continuity in project support from these technical agencies are ensured.

Lack of government capacity is also supported by four project-funded officers (two located in DoF and two in DRD) as well as a full-time international Chief Technical Advisors. Moreover, the project places a considerable emphasis on engaging NGOs and civil society organizations (women's groups, youth groups, fisher's associations) as a key player to fill the public service shortfall. Their specific roles include delivery of DRM-related awareness raising activities, administering simple creel surveys to continuously check the health of marine resources, and general monitoring of outer island level budget expenditures and execution. The project will finance a number of "Training of Trainer" events so that these community members themselves can become a conduit for greater capacity building in their respective islands. Lastly, close collaboration with SPC (Coastal/Oceanic Fisheries Division and SOPAC Division) on Component 1 and 2, which started from the outset of the PPG phase by closely engaging their advisors, is likely to supplement the capacity building support envisaged in this LDCF project. The impact of this collaboration is expected to go beyond the four years of project implementation as they are likely to leverage their regional presence to continue some of the support in this project.

Figure 7 Sign erected by Disaster Management Committee on International Disaster Day (13 October 2012) to raise awareness of logistical challenges in reaching outer islands (Photo: Robert, Kay)

Second key risk for the Project stems from the considerable logistical challenges related to travelling to, and communicating with, the Outer Islands. **Figure 7** illustrates the distances involved – for example it is 460km to Nanumea (the most northern island from Funafuti). The irregularity of Government vessel travel, the lack of air or other transport options, and the considerable times (often weeks) required to be spent on each island as a result, could, without effective mitigation, cause the project to fail and leave outer island communities frustrated. These challenges have been experienced by many previous projects, leading to a reluctance of some donors to invest in Outer Islands. This issue was repeatedly stressed during consultations, including by the NAPA-I Project Team. These travel/logistical risks have a compounding risk-effect that could lead to insufficient ownership by communities for greater impact and sustainability and also the potential for communities to ignore climate change projections in relation to their investment decision-making process. This risk will be mitigated by the purchase of a dedicated project vessel, capable of travelling to the outer islands through a predictable schedule managed by the Project, ensuring timely delivery of project activities,

maintaining continuous interface between project staff and community members, and ultimately generating confidence among Outer Island communities.

2.5. Cost-effectiveness

The proposed project is based on the promotion and dissemination of community-based, low-cost adaptation options suitable for Outer Island communities in Tuvalu, focusing on community-based fisheries livelihoods, community risk reduction and climate financing. Significant cost effectiveness is expected as a result of the proposed approach of promoting community-based adaptation with accompanying capacity building support for outer island administrations and community members. To achieve the intended Objective and Outcomes of the project, the following alternative options were considered:

1. Promoting climate change adaptation through the conventional sectoral support approach
   First alternative considered was to adopt the traditional support approach in which line ministries based in Funafuti continue to provide the necessary adaptation services in outer islands based on centrally-planned activities and budgeting. This approach was deemed less cost-effective for three reasons. First, given the significant capacity constraints in central ministries, it is highly likely that the current trends of significant public service delivery shortfall will continue in the future. To achieve the same level of adaptation impacts from an intervention, the central government would be required to strengthen the staffing in line ministries and undertake continuous visits to outer islands to execute adaptation activities. In reality, it is more likely that the central government will do best within their available budget which is simply suboptimal to bring resilience of outer islands to a desired level. Second, this centrally-led approach would imply that relatively large financial resources made available to each outer island (approximately $100,000 per year per island including SDE, FTF distribution and core revenues, based on the indicative co-financing for the project cycle) will continue to be budgeted and expended based on business-as-usual considerations. These are significant opportunity costs that would have been used in a more resilient manner. Third, this approach bears a significant risk that community awareness about climate risks and ownership of adaptation investments remain underdeveloped, which will undermine the sustainability of investments in the medium- to long-run. For these reasons, this approach was considered less cost-effective in achieving resilience of outer island communities.
2. Promoting wholesale relocation of outer island communities to Funafuti
   Another possibility, in theory, is to fund relocation of communicates to Funafuti. This would enable communities to be closer to technical assistance, early disaster warnings and external support while Tuvaluans continue to engage in business-as-usual extraction of marine resources to maintain their current level of dependence on them. This option is not considered for multiple reasons. First, to maintain a similar level of marine resource dependence under a changing climate while supporting the entire population of Tuvalu in one island, it is expected that a significant level of resource extraction pressure needs to be exerted on pelagic fisheries resources, and current infrastructure (such as motorized boats) in Funafuti, which is more tailored for fishing in the lagoon, needs to be strengthened significantly. Second, potential social, environmental and infrastructural implications of increased population density in Funafuti, which is already overpopulated (1891 persons per sq km in 2011), and the additional investment needed to accommodate additional 50% of the population, is likely to be high. Thirdly, and most importantly, the option to relocate outer island communities

runs counter to the fundamental aspiration embedded in TK-II, which is to strengthen the outer island governance and preserve unique cultures.

Thus, after considering these alternatives to achieve the same objective, it was concluded that the approach proposed in this proposal is most cost-effective as it integrates the following elements in an integrated manner within the same project framework:

1) Placing Kaupules and outer island communities at the center of the process in which to identify locally specific climate risks;
2) Integrating climate risks into their strategic plans and budgeting process;
3) Building capacities of Kaupules to identify, combine and sequence available adaptation resources, from existing SDE, FTF and core revenues, or new external resources;
4) Executing, with technical support from central ministries, adaptation actions that are simple, and maintainable, which ultimately enhance the sustainability and ownership of such investments.

Considerations for value-for-money are also reflected in specific adaptation actions within respective Components proposed in the project. For example, building resilience of marine-based livelihoods in outer islands can also be achieved by providing fishers access to motor vessels so that they can more easily exploit relatively more abundant and resilient pelagic fisheries resources. However, not only will this option be more costly in terms of initial investments required, the sustainability of such an option is highly questionable with increasing fuel price and requirements for maintenance. In terms of DRM related activities in Component 2, Annex 3 demonstrated that, based on historical data (and in the absence of climate change) tropical cyclones will potentially cause annual impacts of 0.2% of GDP and that cyclones with a 40% chance of occurring in the next fifty years (100-year mean return period) could cause damages of 4.4% of GDP. While it is recognised that the focus on Component 2 on the project is to ensure that through reliable and early warnings, there will be a reduction in the loss of human life, there will also likely be flow-on effects to assist in the reduction of infrastructure damage through the enhanced ability of outer island communities to prepare. The alterative to this approach employed by the project is to continue to place emphasis on “recovery” and humanitarian relief after extreme weather events, which are likely to be more costly than building preparedness.

In addition, the PPG process has identified technical specifications of various equipment and materials that are proposed to be purchased in the project (See Annex 11 and 12). The specifications are based on expert’s opinion based on the experience tested in the Pacific region, and such information will allow international procurement processes to be undertaken cost-effectively and competitively.

2.6. Sustainability

The project was designed through extensive, in-depth consultation with a wide range of project beneficiaries in the outer islands, with national and island-level governments (see Annex 4-6). A key part of this consultation process was to understand the on-going needs of outer island communities and their capacity so that the project is designed in such a way to maximize the sustainability of the benefits accrued from the project.

Underlying logic of sustainability is built on the fact that the project will address key adaptation priorities identified in the Tuvalu NAPA, which was formulated based on a thorough consultative process. The likely ownership, and thus sustainability, of the project activities and results at the end of the project is bolstered by the extensive consultation process adopted during the PPG.

Based on inputs from government agencies as well as outer island communities elicited in stakeholder consultations and the Baseline surveys, the implementation process of the project was designed in such a way to engage local communities continuously through a number of island-level workshops and Funafuti-based activities which bring key stakeholders to the main island (such as training of trainers events and annual events).

Importantly, Component 3, which will integrate climate risks into the existing outer island development planning framework and facilitate climate change adaptation financing with existing and future financial resources, is expected to contribute to the overall sustainability of the project results.

In particular, the project will achieve the following multifaceted elements of sustainability:

- **Institutional sustainability:** Capacity building of government and non-government institutions is an integral element of the proposed project and critical for sustainability. For example, Component 1 builds capacity of local communities, especially fisher's associations and Kaupules, to carry out climate resilient marine-based livelihood activities. This includes improved management of MMAs/MPAs, community-based assessments of the health of marine resources, and implementation of locally-tailored, simple, and resilient fisheries activities. On the other hand, the project will build the capacity of DoF at the national level through the recruitment of two project-funded Fisheries Officers, collaboration with the NZAP-funded fisheries advisor which is an important co-finance source for Component 1, and partnership with the SPC Oceanic/Coastal Fisheries Division which will provide its ongoing capacity building support from the Regional perspectives. Under Component 3, the primary focus is capacity building of Kaupules for climate-sensitive planning, budgeting and execution of priority actions within the context of the existing ISP process. Unlike an ad hoc external assistance, using the ISP process as a key entry point will likely produce lasting impacts beyond the project timeframe.
- **Financial sustainability:** Financial sustainability is the underlying principle of Project Component 3, which envisages enhancing the capacity of outer island community to identify and access internal and external financing sources for future climate change adaptation. Apart from dedicated training and capacity building support at the outer island level, the results from the climate finance expenditure assessment (Activity 3.3.2) will provide critical information to both the national government and outer island community to acknowledge existing gaps in terms of climate change expenditure and available funding sources to bridge part of the gaps. On the other hand, continuous dialogues on climate-sensitive planning and budgeting, supported by the ISP Officer funded by the project, will leverage future financing from these resources to maintain or expand traditional, low-cost and easy-to-maintain resilient fisheries technologies promoted under Component 1. This is explicitly underpinned by one of the Outcome indicators for Outcome 3
- **Environmental Sustainability:** The project's focus on enhancing the resilience of marine resources (especially already vulnerable reef resources) to future climate change is based on the premise that maintaining the health of reef marine ecosystems is the most effective way of building natural resilience. This view is fully supported by specific activities supported in the project. They include strengthening and establishing of Marine Managed/Protected Areas, which will improve the health of coastal habitats – most importantly coral reefs – and spill-over effects from increased productivity/growth of fish are likely to impact areas beyond MMAs/MPAs, promotion of traditional canoes supported by FADs, and promotion of traditional fishing techniques. These activities will

ultimately reduce the pressure from external stimuli on fragile reef resources, such as increasing temperature and acidity and overfishing, while assisting communities in making a transition from coastal-dependent fishing to more pelagic-dependent fishing.

Through the above measures the, project results can be sustained long beyond the life of the project. Sustainability has also been built into the project approach by the project's emphasis complementing other initiatives (including capacity development) supported through SPC, NZAID and others.

2.7. Replicability

The project will improve the collection and exchange of knowledge and thus enhance the replicability of successful marine-based livelihoods, disaster risk reduction and climate financing both within Tuvalu and in other countries. Systematic contribution to the Adaptation Learning Mechanism (ALM) and hosting of national workshops on traditional marine-based livelihoods are included in the project activities. Synergies will be created to other regional processes and projects (such as those undertaken by SPC) while the global network of UNDP, assisted by the Fiji Multi Country Office and Region-based Technical Advisors, will play an additional role in disseminating good practices to other countries.

A key element of the proposed marine-livelihoods Component is to share knowledge and experiences within (between elders and youth), among islands and within the greater Pacific community. As outlined above, this will be achieved through an extensive array of communication pathways through which knowledge will be shared, such as Annual Events.

2.8 Stakeholder engagement plan

A wide range of stakeholders will be involved in the project, tailored to the specific needs of the three project components. A crucial component of PPG activities was to consult on the detailed design of stakeholder engagement, which is outlined below. Key stakeholders to be engaged include a range of government line ministries to implement and support the project implementation, NGOs, island-specific Kaupules and Falekaupules and local communities including some of their interest/community groups. In general, stakeholder engagement in the project implementation begins at the inception workshop which will be held at the capital. Government departments, Funafuti-based representatives from island Kaupules, NGOs/CSOs and citizens will be invited to the workshop and the focus of the project, the timing of island visits and stakeholder consultations, types and nature of adaptation investments, and expectations from stakeholders engaged will be (re)presented. During the first island visit, island-level inception workshop will be organized in each island covering the same topics.

Each component of the project has its own stakeholder groups:

- Component 1 will be delivered through the Department of Fisheries who will host all Component 1 activities, deploy staff in the various activities during project implementation and report on activities and expenditure with assistance from the two project-funded Fisheries Officers, Project Coordinator and Chief Technical Advisor. The Project Team will closely work with SPC's Oceanic/Coastal Fisheries Division and NZAP's Fisheries Advisor, both of which are providing co-financing to the project. Kaupule and Fisher's association in each island will be the main interface for the project staff at the subnational level; Fishers, women and youth will be the main direct

beneficiaries on the outer islands, although the project is expected to permeate all segments of the communities.

- Component 2 will be delivered by the Department of Environment with close collaboration with the Disaster Management Office, Meteorological Services, and Radio Tuvalu on Funafuti. These agencies are all central to embedding the project's interventions into existing communications and early warning systems. The Project Team will work closely with the SPC SOPAC Division, which is co-financing the LDCF project, especially on integrating new procedures for the new communication capacity enhancement measures, financed by the LDCF resources, into the revised National Disaster Management Plan. On the outer islands, the main stakeholders include the communities themselves, the island Disaster management Committees (DMC) and relevant NGOs which will act as a service provider related to awareness raising Output of the Component.
- Component 3 will work closely with MHARD and the Falekaupule Trust Fund in Funafuti. On the outer islands, the project will work closely with Kaupules to enhance their strategic planning and budgeting processes to ensure adaptation can be built into island-level planning. This will necessarily include regular consultations with communities through community meetings to seek views and ensure clear dialogue.

Informal stakeholder engagement may take place at any time and any location within the operational terms and guidelines set out by the project at start of implementation.

All activities on the outer islands will be carried out through the assistance of the Ministry of Home Affairs and Development (MHARD) and the island representatives on Funafuti. These are the official conduits for all outer islands activities and working through these channels will ensure smooth implementation and cooperation from island leaders. On the outer islands themselves the Kaupule staff are the executives of each island's Falekaupule (governing council) and will be integral to all interventions. The Kaupule will need to give approval for all activities, use of land, funding arrangements and involvement. The communities, and particularly the local community groups of fishers, women, youth and elders will be involved in all decision-making through regular meetings in the community hall (maneapa). The project intends to run regular meetings incorporating educational videos, the outcomes of the participatory monitoring videos (under Component 3) and other mechanisms to stimulate discussions and derive steering for the project. This will ensure that the interventions remain in touch with community stakeholder aspirations at all stages of the project that will be enhanced through the scheduled outer island visits (see Annex 13). In addition, events that are designed to promote information sharing about the adaptation effectiveness of investments in Component 1 and 2, such as annual events to demonstrate traditional canoe designs and food preservation techniques and mock drills on the National Disaster Risk Reduction Day, are expected to provide additional stakeholder engagement benefits.

In Tuvalu, due to its unique geographical circumstances, workshops and training activities in outer islands (or in Funafuti that bring outer island communities to the capital) are a vital opportunity not only for the sake of capacity building, but also for exchanging information across islands and maintaining the engagement throughout the course of the project. Those workshops and training activities that will be undertaken through the project lifetime are shown below in Table 8. Inevitably, due to the logistical challenge, some of the workshops/trainings will be jointly organized with multiple objectives covering different elements of the three Components.

Table 8 Stakeholder involvement workshops and training activities

Component / Outputs	Title	Timing	Objective	Location	Target Participants
All	Initial formal meeting with Kaupule and community	Year 1 (Inception for the following 6 months)	Establishing the presence of the project on the island; Signing of an MoU with timelines about scheduled visits	Outer islands	All community, especially Kaupules
1.1	FAD discussions workshops	Year 1	Identify the best type of FAD design and management needs	Outer islands	Fishers Fisheries officers Kapule
1.1	Improved canoe design, traditional fishing, postharvest, and sea safety trainings	Year 1-2	Knowledge sharing and training on resilient livelihood options	Outer islands	Fishers Kaupules Women's groups Youth Fisheries officers International consultants
1.2	Initial discussion on MMA/MPA	Year 1	Collect and synthesize information about existing management of MMAs/MPAs	Outer islands	Kaupules Falekaupules Fisheries officers Fishers
1.2	Finalization of MMA/MPA	Year 2-3	Finalize locations of new/expanded MMAs/MPAs	Outer islands	Kaupules Falekaupules Fisheries officers Fishers
1.2	Training / awareness raising on MMA/MPA	Year 2-3	Training on fisheries monitoring	Outer islands	Kaupules Falekaupules Fisheries officers Fishers
2.1	Technical training sessions	Year 1 and 3	Installation, use and maintenance of communication equipment	Funafuti	Tuvalu Meteorological Department and Radio Tuvalu Media Department International consultant
2.1	Technical monitoring visits	Year 3	Technical monitoring of communications equipment	Outer islands	Tuvalu Meteorological Department and Radio Tuvalu Media Department PMU
2.1	NDMP integration workshop	Year 2/3	Revising operational procedures reflecting new communications equipment	Funafuti	DoE DMO SPC SOPAC PMU DMC
2.2	Mock drills	Year 3 and 4	Testing of all communications equipment and new NDMO	Funafuti and outer islands	[Funafuti] DoE DMO PMU [Outer islands] All community members Island DMC
3.1	Training of trainers to mainstream climate risks into ISPs	Year 1	Train island-level focal points to initiate the mainstreaming process	Funafuti	Selected members of Kaupules, Falekaupules and women's group DRD staff MoF staff Public Works Dept

					NGO staff ISP Officer Community Support Officer
3.1	Mainstreaming climate risks into ISPs	Year 1-4	Enhance the skills of outer island administrations for identifying specific adaptation priority actions, in line with the ISP, prioritizing and budgeting	Outer islands	Kaupules and Falekaupules Women's group Youth groups Fisher's associations Island DMC ISP Officer Community Support Officer
3.1/3.2	Final ISP workshop	Year 4	Presentation of the revised ISP (with climate change integrated) Presentation of performance on annual budgeting, monitoring and execution	Funafuti	DRD elected members of Kaupules, Falekaupules and women's group DRD staff MoF staff NGO staff ISP Officer Community Support Officer
3.2	Participatory video Training of Trainers	Year 2	Training in the technique of participatory video	Funafuti	Interest groups such as women, youth, disaster management committee, fisher's association, and NGOs International consultant
3.2	Community awareness workshops	Year 2/3	Awareness raising about monitoring of ISP execution and the use of community scorecards	Outer islands	Interest groups such as women and youth Kaupules Community Support Officer
3.3	Adaptation priority plans forum	Annual	Presentation of adaptation actions in ISPs to line ministries	Funafuti	DRD and other line ministries ISP Officer NGOs
3.3	Community workshops		Presentation of the results from the climate financing expenditure review	Outer islands	All community members and representative groups ISP Officer
All	Annual Event as part of National Tuvalu Day (1st October)	Years 1-4	Awareness raising and community engagement on all aspects of the project	Funafuti	DoE, DRD, DoF Representatives from communities

NGOs, under the TANGO umbrella, and donor projects such as the NZAP Fisheries Institutional Strengthening Project will be incorporated as collaborators in selected parts of the project to ensure there is no duplication of effort and stability to the gains made by the LDCF project.

The Project will be implemented in close cooperation with the Secretariat of the Pacific Community, including headquarters in Noumea and SPC/SOPAC Division in Fiji to assist with Components 1 & 2. SPC will provide educational materials and assistance with regional expertise throughout the project ensuring the best, most up-to-date approaches to resilient livelihoods and disaster risk management are implemented as the project progresses.

During the PPG phase, the design team consulted with numerous government officials, NGOs and individuals to obtain their views on the requirements for meeting project objectives, while at the same time informing them of the need for and approach to the problem (see Annex 4-6). This was complemented with a detailed survey on outer islands and in Funafuti with 77 interviews (reaching 214 individuals) of key informants and focus groups (see Annex 5). The survey ensured a good balance of gender and interest groups, specifically targeting local government, women, youth and fishers. The survey consultations also acted to inform people of the approach to the project, to which the response was overwhelmingly positive.

All project activities will be closely monitored by the individual implementers (who will vary by topic), the Project Coordinator assisted by the Chief Technical Adviser, and the Department of Environment. This will include detailed records of stakeholder involvement, the decisions made by communities and Kaupules and written and photographic/video records of the interventions themselves. Towards the end of the project, the CTA with assistance from Fisheries staff will modify the baseline survey to measure outcomes as perceptions in the community.

Effective stakeholder involvement of island communities requires an understanding that Tuvalu's clan-based social structure, and communal traditions are the key building blocks of Tuvaluan society. While these structures have traditionally sought to promote egalitarianism, it is recognised that women have taken a limited role in traditional community meetings in the past, their voices were usually heard through representation by the head of the household in village meetings. Even where those arrangements still exist, the project will use combinations of contact strategies in both outer islands and in Funafuti: with the now generally-accepted practice of calling specific meetings with women's and youth groups, the project will reach these segments of the community to ensure targeting of the specific needs for different community groups. In addition, special attention will be paid to ensure that potentially marginalized groups, such as the disabled and religious minorities, are integrated into all aspects of the project. These measures recognise the particular challenges of ensuring effective engagement with all segments of outer island communities with respect to climate change, and ensuring inclusion from the increasing numbers of people living in the informal settlements highlighted by the UN Special Rapporteur[34].

[34] Press Statement by the United Nations Special Rapporteur on the human right to safe drinking water and sanitation Ms. Catarina de Albuquerque - Mission to Tuvalu (19 July 2012)
http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=12372&LangID=E

3 PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Programme Outcome as defined in Sub-Regional Programme Document 2013-2017:
UNDAF Sub-Regional Programme Outcome 4 (UNDAF Outcome 1.1)

- Improved resilience of PICTs, with particular focus on communities, through integrated implementation of sustainable environment management, climate change adaptation/mitigation and disaster risk management

Sub-Regional Programme Outcome 2 (UNDAF Outcome 5.1)

- Regional, national, local and traditional governance systems are strengthened, respecting and upholding human rights, especially women's rights in line with international standards

Sub-Regional Programme Outcome Indicators (UNDP Sub-Regional Program Document):
Outcome 4

- Share of budget resources earmarked for environmental sustainability, disaster risk management, climate change adaptation and mitigation; share of population with sustainable access to improved water sources and to renewable energy (disaggregated by gender and age); ratio of protected area to maintain biological diversity

Outcome 2

- Number of countries to develop service delivery mechanisms to ensure greater equity and inclusion of most vulnerable in the population..

Primary applicable Key Environment and Sustainable Development Key Result Area: 3. Promote climate change adaptation

Applicable GEF Strategic Objective and Program:
CCA-1: "Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level"
CCA-2: "Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level."

Applicable GEF Expected Outcomes:
Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas
Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas
Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas

Applicable GEF Outcome Indicators:
Outcome Indicator 1.1.1: Adaptation actions implemented in national/sub-regional development frameworks (no. and type)
Outcome Indicator 1.3.1: Households and communities have more secure access to livelihood assets (Score) – Disaggregated by gender
Outcome Indicator 2.1.1: Relevant risk information disseminated to stakeholders (Yes/No)

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions

Project Objective[35] Resilience of island communities to climate change variability and risks is strengthened through participatory island-level planning, budgeting and execution and community-led investments	Take up of climate resilient marine-based livelihood options	Traditional techniques that are resilient to changes in marine ecosystems have been lost or are not passed down by old people while access to new techniques, materials and information from off island and overseas is poor. These are limiting options for pursuing resilient, appropriate and safe low-cost livelihoods.	By the end of the Project at least 40% of the targeted households adopted at least one form of traditional resilient marine livelihood methods (including canoe building, traditional fishing methods, postharvest fish processing, or aquaculture) (gender-disaggregated data will be presented)	Project terminal evaluation report Project surveys and technical assessment reports	**Assumptions:** • Tangible socio-economic benefits are generated for and recognized by the project beneficiaries • Project activities are fully participatory • Project team has access to a dedicated vessel to meet expectations of communities and timely delivery of project activities • Sufficient political commitment from key stakeholder governments are ensured throughout the life cycle of the project • The government is able to attract high-quality project staff **Risks:** • There is insufficient ownership by communities for greater impact and sustainability • Local capacity constrains for implementation • Logistics of working in outer island
	Percentage of the Tuvaluan population covered by the 24/7 early warning system	The existing communications systems are inadequate to send early warning message in a timely manner	95% of Tuvaluan receives early warning in a timely manner using one of the multiple communication lines (gender-disaggregated data will be presented)	Mock drills	
	Outer island communities able to access climate/development funds using climate-mainstreamed ISPs	No climate resilience investments made using the ISPs as a guiding tool	By the end of the project at least eight adaptation priority actions (one in each island) at the island level, outlined in ISPs, are financed by either domestic or external resources and executed.	Assessments of annual budget reports from outer islands Mid-term and terminal evaluation reports	

[35] *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR*

Outcome 1[36] Marine based coastal livelihoods of Tuvaluan outer islands made resilient to declining productivity induced by climate variability and change Scores (from 1 to 5) in this section are "Households having access to secure access to marine livelihood assets" assigned based on the results of the Baseline survey as per the AMAT framework. Scores are: 1. No access to marine livelihood assets; 2. Poor access to …; 3. Moderate access to …; 4. Secure access to…; 5. Very secure access to …	1.1 Households and communities have more secure access to livelihood assets – disaggregated by gender [AMAT 1.3.1]	Few households have access to traditional and resilient livelihood assets and methods (Score=2)	Score improved to 4: By the end of the project at least 50% of targeted outer islands households have access to climate resilient marine-based livelihood methods introduced/strengthened in the project (gender-disaggregated data will be presented)	Questionnaires (repeated and modified for survey of key informants, women, youth and fishers) Mid-term and terminal evaluation reports	**Assumptions:** • People on outer islands see traditional and resilient methods as desirable given development imperatives and lifestyle preferences. • People on outer islands see managed areas as a common resource, not just for VIP visitors **Risks:** • Shipping schedules and weather impede transmission of trainers and materials. • People fail to carry out creel surveys systematically • Unexpected increase in shipping schedules and costs makes it too difficult to run annual events. • Uptake of knowledge is low and resilience not significantly improved.
	1.2 The area of Marine Protected Areas (MPAs) or Locally Managed Marine Areas (LMMAs) managed in a climate-resilient manner	Currently 76 km^2 of island reef areas is under marine management (includes Funafuti Conservation Area at 33km^2) but currently no systematic management arrangement or resource monitoring framework is in place	The area of MPA/MMAs is clarified and some form of management applied to at least a quarter of the reef area on each outer island (area to be calculated) with a corresponding climate-resilient community management plan or Kaupule by-law. Capacity to undertake creel surveys and maintain the database developed among community-based MPA/MMA management groups.	Records of marine managed areas and presence of by-laws or management plan Creel survey results linked to management responses.	
	1.3 The level of awareness about links between improved marine ecosystem management and sustainability and resilience of subsistence marine-based livelihoods	Current understanding of the links between marine resource monitoring, management and livelihoods is low.	At least 50% of Fisheries staff, Kaupule, women, youth and fishers interviewed confirm a clear link between resource management and resilience of livelihoods (gender-disaggregated data will be presented)	Questionnaires (repeated and modified for survey of key informants, women, youth and fishers) Mid-term and terminal evaluation reports	
Outputs supporting Outcome 1 1.1. Climate-resilient marine-based livelihood techniques are implemented benefiting at least 50% of the population					

[36] *All outcomes monitored annually in the APR/PIR. It is highly recommended not to have more than 4 outcomes.*

1.2. Capacity of local administrations, CSOs, communities and Community Fisheries Centers enhanced to integrate climate risks in the community-based management of MMA/MPA including zoning guidance, marine resource stock surveys and monitoring and enforcement 1.3. Awareness enhanced for at least 2000 people including island Kaupules, central government staff, CSOs, and community members to understand and respond to the impacts of climate induced risks on marine based coastal livelihoods					
Outcome 2 Capacity of outer islands enhanced to respond to increasing/intensifying climate induced hydro-meteorological risks	2.1. Relevant risk information disseminated to stakeholders [AMAT 2.1.1.]	The existing warning/communication system with triple-backup system (satellite phone, landline and electricity-powered radio) is inadequate to warn communities within a reasonable time due to deficiencies in power systems for telephone systems in the outer islands.	By the end of the project at least 95% of populations are able to receive and respond to early warnings and take the appropriate actions following the warning (gender-disaggregated data will be presented)	Observations and reports from the annual mock drills Mid-term and terminal evaluation reports	**Assumptions:** • AM Radio infrastructure, which is the primary baseline project for covering 100% of population continues to operate under extreme conditions • Disaster Management Arrangement Bill is revised in a timely manner to planned to be revised with assistance from SOPAC • There is sufficient technical capacity and human resources for installation of communication equipment **Risks:** • High turn-over among key stakeholders in the government and NGO sector during the project implementation results in loss of knowledge and experience • Bureaucratic process causes delays in the revision of the Disaster Management Arrangement Bill •
Outputs supporting Outcome 2 2.1. Each island is equipped with robust communication facilities and early warning system facilities 2.2. Raised awareness and preparedness of outer island communities for climate-induced extreme events					

Outcome 3 Enhanced capacity of communities to access internal/external financing for community-based climate change adaptation through existing participatory development planning processes	3.1 Local development framework (i.e. ISP)_that integrate climate risks	Only two islands have some reference to ISPs. Annual budgeting exercise has been undertaken only in one island.	By the end of the project, all outer islands have their ISPs revised to integrate climate risks Annual budgeting process building on the ISP is in place	BTOR from the periodic monitoring visits Presence of the revised ISP and annual budget documents Mid-term and terminal evaluation reports	**Assumptions:** • By the commencement of the project, all remaining islands complete ISPs • There is high level commitment and buy-ins from officials in the central and outer island government to revise their ISPs and use domestic resources for adaptation purposes • Communities are prepared to set aside time and funds for monitoring of available resources and execution of adaptive investments • There is compliance of the Falekaupule Act by Kaupules • Available domestic resources to outer islands (SDE, FTF and core revenues) remain viable sources **Risks:** • Agreements are not made among communities on the adaptation priority actions financed by domestic resources • Limited capacity within technical agencies to support the execution of island-level priority actions • Disruptions in periodic visits result in non-completion of annual budgets
	3.2 Adaptation actions implemented from island level plans (no. and type) [AMAT 1.1.1]	No adaptation action has been implemented based on Island Strategic Plans	By the end of the project at least eight adaptation priority actions (one in each island) at the island level, outlined in ISPs, are financed by either domestic or external resources and executed.	Audited Island accounts Compiled report produced by the ISP officer on the consolidated island-level budgets and use	
Outputs supporting Outcome 3 3.1. All outer Island Strategic Plans integrate island-specific climate risks through existing gender-sensitive, participatory processes					

3.2. Capacity of Kaupules, Falekaupules and community members for monitoring adaptation investments strengthened
3.3. National and outer island capacity to leverage, sequence and combine domestic resource for climate change adaptation investments strengthened

4 TOTAL BUDGET AND WORKPLAN

Award ID:	00073054	Project ID(s):	00086021
Award Title:	PIMS 4571 FSP LDCF: Effective and responsive island-level governance to secure and diversify climate resilient marine-based coastal livelihoods and enhance climate hazard response capacity		
Business Unit:	FJI10		
Project Title:	Effective and responsive island-level governance to secure and diversify climate resilient marine-based coastal livelihoods and enhance climate hazard response capacity		
PIMS no.	4571		
Implementing Partner (Executing Agency)	Ministry of Foreign Affairs, Environment, Trade, Labour and Tourism		

GEF Outcome/Atlas Activity	Responsible Party / Implementing Agency	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	Budget Note
OUTCOME 1 Marine based coastal livelihoods of Tuvaluan outer islands made resilient to declining productivity induced by climate variability and change	DoF	TBD	GoT	73400	Rental & Maint of Othr Equipment	7,772	7,772	7,772	7,772	31,088	1A
		62160	LDCF	71200	International consultants	211,042	154,792	186,194	12,000	564,028	1B
				71300	Local consultants	26,750	35,500	49,250	23,000	134,500	1C
				72300	Material & goods	343,500	49,600	8,000	2,000	403,100	1D
				74200	Audiovisual & Print Production Costs	24,500	24,500	4,500	62,500	116,000	1E
				72100	Contractual services - Companies	80,000	-	-	7,000	87,000	1F
				75700	Training, Workshops and Conferences	9,750	11,500	41,000	20,500	82,750	1G
				71600	Travel	94,575	80,036	149,065	94,881	418,557	1H
				72200	Equipment and furniture	120,000	-	-	-	120,000	1I

				73400	Rental & Maint of Othr Equipment	12,228	12,228	14,728	14,728	53,912	1J
				74500	Miscellaneous Expenses	5,038	5,038	5,038	5,039	20,153	1K
					Sub-total GoT	**7,772**	**7,772**	**7,772**	**7,772**	**31,088**	
					Sub-total LDCF	**927,383**	**373,194**	**457,775**	**241,648**	**2,000,000**	
					Sub-total Outcome 1	**935,155**	**380,966**	**465,547**	**249,420**	**2,031,088**	
OUTCOME 2 Capacity of outer islands enhanced to respond to increasing/intensifying climate induced hydro-meteorological risks	DoE	TBD	GoT	73400	Rental & Maint of Othr Equipment	5,829	5,829	5,829	5,829	23,316	2A
		62160	LDCF	71200	International consultants	123,477	149,427	92,418	31,500	396,822	2B
				71300	Local consultants	-	4,000	-	4,000	8,000	2C
				72300	Material & goods	282,500	160,000	-	-	442,500	2D
				72100	Contractual services - Companies	4,200	38,600	-	-	42,800	2E
				74200	Audiovisual & Print Production Costs	500	20,500	17,500	12,500	51,000	2F
				71600	Travel	85,490	89,184	89,750	84,520	348,944	2G
				72200	Equipment and furniture	150,000	-	-	-	150,000	2H
				73400	Rental & Maint of Othr Equipment	10,296	10,296	12,171	12,171	44,934	2I
				74500	Miscellaneous Expenses	3,750	3,750	3,750	3,750	15,000	2J
					Sub-total GoT	**5,829**	**5,829**	**5,829**	**5,829**	**23,316**	
					Sub-total LDCF	**660,213**	**475,757**	**215,589**	**148,441**	**1,500,000**	
					Sub-total Outcome 2	**666,042**	**481,586**	**221,418**	**154,270**	**1,523,316**	
OUTCOME 3 Enhanced capacity of communities to access internal /external	DRD	TBD	GoT	73400	Rental & Maint of Othr Equipment	1,943	1,943	1,943	1,943	7,772	3A
		62160	LDCF	71200	International consultants	90,135	29,885	38,424	3,000	161,444	3B

financing for community-based climate change adaptation through existing participatory development planning processes				71300	Local consultants	50,000	36,300	35,800	35,000	157,100	3C
				75700	Training, Workshops and Conferences	9,200	4,200	6,200	4,200	23,800	3D
				74200	Audiovisual & Print Production Costs	7,400	1,000	-	-	8,400	3E
				71600	Travel	36,525	22,584	29,655	16,475	105,239	3F
				72200	Equipment and furniture	30,000	-	-	-	30,000	3G
				73400	Rental & Maint of Othr Equipment	1,932	1,932	2,557	2,557	8,978	3H
				74500	Miscellaneous Expenses	1,250	1,250	1,250	1,289	5,039	3I
					Sub-total GoT	**1,943**	**1,943**	**1,943**	**1,943**	**7,772**	
					Sub-total LDCF	**226,442**	**97,151**	**113,886**	**62,521**	**500,000**	
					Sub-total Outcome 3	**228,385**	**99,094**	**115,829**	**64,464**	**507,772**	
PROJECT MANAGEMENT	DoE	62160	LDCF	71300	Local consultants	24,000	24,000	24,000	24,000	96,000	0A
				72200	Equipment and furniture	12,500	-	-	-	12,500	0B
				72500	Supplies	4,000	3,500	3,500	4,459	15,459	0C
				75700	Training, Workshops and Conferences	6,500	1,500	1,500	1,500	11,000	0D
				74100	Professional services	6,000	3,000	3,000	3,000	15,000	0E
				71600	Travel	1,380	1,380	1,380	1,380	5,520	0F
				74500	Miscellaneous Expenses	724	724	724	724	2,896	0G
				74500	UNDP cost recovery chrgs-Bills	16,878	10,047	7,918	6,782	41,625	0H
					Sub-total LDCF	**71,982**	**44,151**	**42,022**	**41,845**	**200,000**	
					Sub-total PMU	**71,982**	**44,151**	**42,022**	**41,845**	**200,000**	

		GoT Total	**15,544**	**15,544**	**15,544**	**15,544**	**62,176**	
		LDCF Total	**1,886,020**	**990,253**	**829,272**	**494,455**	**4,200,000**	
		Project Total	**1,901,564**	**1,005,797**	**844,816**	**509,999**	**4,262,176**	

Summary of Funds: [37]

	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total
LDCF	1,886,020	990,253	829,272	494,455	4,200,000
UNDP - SGP	911,190	-	-	-	911,190
SPC	644,865	644,865	494,865	194,865	1,979,460
NZAP	500,000	500,000	-	-	1,000,000
Tuvalu Red Cross	51,875	51,875	51,875	51,875	207,500
Falekaupule Trust Fund	310,881	310,881	310,881	310,881	1,243,524
GoT	3,624,301	3,624,301	3,624,302	3,624,302	14,497,206
TOTAL	7,929,132	6,122,176	5,311,195	4,676,377	24,038,880

[37] *Summary table should include all financing of all kinds: GEF financing, cofinancing, cash, in-kind, etc...*

4.1 Budget Note

Note	Description of cost item
1A	Cash contribution from the Government of Tuvalu for the maintenance of a vessel
1B	1. Chief Technical Advisor: Total of 14.4 months over Y1, Y2 and Y3 (@$714/day) 2. FADs specialist (Output 1.1): Total 105 days in Y1 (@$650/day) 3. Fisheries monitoring specialist (Output 1.2): Total 105 days in Y1 (@$650/day) 4. Canoe building specialist (Output 1.1): Total 105 days in Y2 (@$650/day) 5. Postharvest and traditional fishing specialists (Output 1.1): Total 105 days each in Y3 (@$650/day) 6. (Prorated across Outcomes) 50 days for mid-term evaluation (Y3) and 50 days for terminal evaluation (Y4): 100 x $600 = total $60,000 (Component 1 contribution is 40% of the total)
1C	1. Full-time fisheries officer (2 persons): @$9,000/year/person 2. MMA/MPA specialist: Total 210 person-days in Y1, Y2 and Y3 (@$250/day) 3. Annual event planner: Output based engagement for $5,000 per event in Y3 and Y4
1D	1. Canoe building (Output 1.1): $86,500 including freight in Y1 2. Refurbishment of CFCs (Output 1.1): $126,500 including freight in Y1 3. Aquaponics (Output 1.1): $12,000 including freight in Y1 and Y3 4. Beacon with reflector and flags for MMA/MPA (Output 1.2): $16,000 including freight in Y1 5. FADs-related materials : (Output 1.1)$106,500 including freight and container in Y1 6. Fisheries monitoring (Output 1.2): $8,000 total ($2,000 per year) for Y1-Y4 7. Postharvest-related materials (Output 1.1): $19,000 including freight in Y2 8. Traditional fishing materials (Output 1.1): $28,600 in Y2
1E	This includes production of lessons learned from climate resilient marine-based livelihood activities (Output 1.1), effectiveness of MMA/MPA (Output 1.2), translation of existing materials, production of radio programs for awareness raising, and hosting of project website.
1F	1. Local contractor for refurbishment of CFCs (Output 1.1): $10,000 for each island in Y1. 2. Contractual services for booklet design and translation: $7,000 in Y4.
1G	Preparation of Annual Event: $20,500 per year for Y3 and Y4; Workshops/trainings in outer islands: $41,750
1H	International Travel Output 1.1: International consultant travel ($36,000); DSA in Fiji (@$250/day) and Tuvalu (@$125/day) – DSA total $10,400; Total $46,400 Output 1.2: International consultant travel ($9,000); DSA in Fiji (@$250/day) and Tuvalu (@$125/day) – DSA total $1,125; Total $10,125 Local Travel Output 1.1:

	• DSA in outer islands for international/national consultants and project staff (@$60/day). [Y1] 451 person-days, total $27,060; [Y2] 428 person-days, total $25,680; [Y3] 598 person-days, total $35,880; and [Y4] 330 person-days, total $19,800. • Extra fuel required in outer islands for FADs deployment: $4,500 Output 1.2: • DSA in outer islands for international/national consultants and project staff (@$60/day). [Y1] 224 person-days, total $13,440; [Y2] 308 person-days, total $18,480; [Y3] 308 person-days, total $18,480; and [Y4] 120 person-days, total $7,200. • Boat hire in outer islands for MMA/MPA setup: $1,000 per island = total $8,000 Output 1.3: • Annual event (Y3 and Y4): Travel and DSA for 120 participants from outer islands ($25,080/year) (Prorated across Outcomes) Travel cost of international consultant for mid-term evaluation ($4,500) and terminal evaluation ($4,500) and DSA in Fiji (@$250/day for 4 days), Funafuti (@$125/day for 13 days), and outer island (@$60/day for 24 days). Total $6,852.
1I	Component 1 contribution for inter-island boat purchase (Total cost of the vessel is estimated to be $300,000)
1J	Component 1 contribution for fuel and maintenance of the vessel[38]
1K	Approximately 1% of the total Outcome 1 budget during Y1-Y4 is allocated for contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel and materials
2A	Cash contribution from the Government of Tuvalu for the maintenance of a vessel
2B	1. Chief Technical Advisor: Total of 16 months over Y1, Y2 and Y3 (@$714/day) 2. International consultant (2 persons) for communication equipment upgrade/installation (Output 2.1): Total of 165 person-days (@$550/day). Indicative days of engagement are: 30 days in Y1, 75 days in Y2, 30 days in Y3, and 30 days in Y4. 3. International consultant for education curriculum development (Output 2.2): Total 46 days of engagement (26 days in Y1 and 20 days in Y3 @$600/day) 4. (Prorated across Outcomes) 50 days for mid-term evaluation (Y3) and 50 days for terminal evaluation (Y4): 100 x $600 = total $60,000 (Component 2 contribution is 50% of the total)
2C	Translation of existing and new awareness booklet materials into Tuvaluan: @$4,000 in Y2 and Y4

[38] The actual costs of maintenance are estimated to be $45,000 per year. Through cash-cofinancing, the Government of Tuvalu has agreed to finance $62,176 for this purpose. Also in 2013 and part of 2014, the first LDCF project will share the running costs of the vessel. This is estimated to be $22,000 in Y1 and $29,000 in Y2. The amount indicated in this budget table is reduced by these amounts.

2D	1. Solar-powered radio units (Output 2.1) in Y1: Total 1,300 units @$100/unit including freight 2. SMS-based communication system, solar panels and sirens (Output 2.1) in Y1: Total 15 units @$7,500/unit 3. External antennas for iridium satellite phones (Output 2.1) in Y1: Total 20 units @$1,000/unit 4. $20,000 for freight for item 2 and 3 5. Diesel power generators in Y2: Total 2 units (one 30 KVA for Radio Tuvalu; one 12 KVA for Met Office) total of $65,000 6. Portable broadcast console and accessories for Emergency Operating Centre in Y2: @$5,000 for the unit 7. 4 HF radio systems, accessories, and solar panels for Met Office communication strengthening in Y2: $90,000
2E	1. Installation of equipment for improved communications and early warning: $22,800 in Y1 and Y2 2. Installation of equipment for Met Office communications strengthening: $20,000
2F	1. $15,000 for printing and distribution of at least 2 existing awareness materials in Y2 2. $24,000 for development, printing and distribution of at least 2 new awareness materials in Y3 and Y4 3. $2,000 for radio programme development and broadcasting 4. $10,000 for printing and distribution of school curriculum
2G	International Travel Output 2.1: International consultant travel – 5 trips ($15,000); DSA in Fiji (@$250/day) and Tuvalu (@$125/day) – DSA total $23,125; Total $38,125 Output 2.2: International consultant travel – 2 trips ($6,000); DSA in Fiji (@$250/day) and Tuvalu (@$125/day) – DSA total $6,000; Total $12,000 Local Travel Output 2.1: • DSA in outer islands for international/national consultants and project staff (@$60/day). [Y1] 39 person-days, total $2,340; [Y2] 39 person-days, total $2,340; [Y3] 95 person-days, total $5,700; and [Y4] 80 person-days, total $4,800. Output 2.2: • DSA in outer islands for international/national consultants and project staff (@$60/day). [Y1] 90 person-days, total $5,400; [Y2] 90 person-days, total $5,400; [Y3] 55 person-days, total $3,300; and [Y4] 40 person-days, total $2,400. (Prorated across Outcomes) Travel cost of international consultant for mid-term evaluation ($4,500) and terminal evaluation ($4,500) and DSA in Fiji (@$250/day for 4 days), Funafuti (@$125/day for 13 days), and outer island (@$60/day for 24 days). Total $5,139.
2H	Component 2 contribution for inter-island boat purchase (Total cost of the vessel is estimated to be $300,000)
2I	Component 2 contribution for fuel and maintenance of the vessel

2J	Approximately 1% of the total Outcome 2 budget during Y1-Y4 is allocated for contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel and materials
3A	Cash contribution from the Government of Tuvalu for the maintenance of a vessel
3B	1. Chief Technical Advisor: Total of 3.6 months over Y1, Y2 and Y3 (@$714/day) 2. ISP mainstreaming specialist and toolkit production (Output 3.1): Total 80 days in Y1 and Y3 (@$650/day) 3. Participatory video expert (Output 3.2): Total 15 days in Y2 (@$550/day) 4. Climate finance assessment consultants (one CC expert and one PFM expert) (Output 3.3): Total 70 days in Y1 (@$650/day) 5. (Prorated across Outcomes) 50 days for mid-term evaluation (Y3) and 50 days for terminal evaluation (Y4): 100 x $600 = total $60,000 (Component 3 contribution is 10% of the total)
3C	1. Full-time ISP Officer: @$17,500/year/person 2. Full-time Community Support Officer: @$17,500/year/person 3. Local governance specialist for climate finance assessment: Total 25 days in Y1 (@$300/day) 4. PFM specialist for climate finance assessment: Total 25 days in Y1 (@$300/day) 5. Translation of ISP toolkit: @$500 6. Translation of CC-mainstreamed ISPs: @$1,600
3D	1. Workshop in Funafuti for ISP formulation and follow-up in Y1 and Y3: $4,000 total 2. ISP consultation and annual budget formulation each year at outer islands: $12,000 3. Outer island consultation for climate finance assessment in Y1: $3,000 4. Monitoring of ISPs and budgeting process by community members each year at outer islands: $4,800
3E	1. Purchase of camcorder for community participatory video: $600 * 9 = $5,400 2. Printing and distribution of ISP toolkit: $3,000
3F	International Travel Output 3.1: International consultant (ISP mainstreaming and toolkit production) travel ($6,000); DSA in Fiji (@$250/day) and Tuvalu (@$125/day) – DSA total $8,000; Total $14,000 Output 3.2: International consultant (Participatory video) travel ($4,000); DSA in Fiji (@$250/day) and Tuvalu (@$125/day) – DSA total $1,750; Total $5,750 Output 3.3: International consultants (Climate finance assessment – CC expert and PFM expert) travel ($6,000); DSA in Fiji (@$250/day) and Tuvalu (@$125/day) – DSA total $5,250; Total $11,250 Local Travel Output 3.1: • DSA for outer island participants in ISP-related workshops in Funafuti in Y1 and Y3/Y4: [Y1] 64 person-days, total $3,840; [Y3/Y4] 64 person-days, total $3,840 • DSA in outer islands for international/national consultants and project staff (@$60/day). [Y1-Y4] 90 person-days, total $5,400 each year; $360 for Y1-Y3 for CTA's DSA.

	Output 3.2: • DSA for outer island participants in Participatory monitoring workshops in Funafuti in Y1 and Y3/Y4: [Y1] 32 person-days, total $1,920; [Y3/Y4] 32 person-days, total $1,920 • DSA in outer islands for international/national consultants and project staff (@$60/day). [Y1-Y4] 50 person-days, total $3,000 each year. $360 for Y1-Y3 for CTA's DSA. Output 3.3: • DSA in outer islands for international/national consultants and project staff (@$60/day). [Y1] 2 person-days, total $120; [Y2] 2 person-days, total $120 each year; [Y3] 50 person-days, total $3,000. $360 for Y1-Y3 for CTA's DSA. (Prorated across Outcomes) Travel cost of international consultant for mid-term evaluation ($4,500) and terminal evaluation ($4,500) and DSA in Fiji (@$250/day for 4 days), Funafuti (@$125/day for 13 days), and outer island (@$60/day for 24 days). Total $5,139.
3G	Component 3 contribution for inter-island boat purchase (Total cost of the vessel is estimated to be $300,000)
3H	Component 3 contribution for fuel and maintenance of the vessel
3I	Approximately 1% of the total Outcome 2 budget during Y1-Y4 is allocated for contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel and materials
	PROJECT MANAGEMENT
0A	Salaries for 48 months of National Project Coordinator (@USD 1,250/month), 48 months of Administrative/Financial Assistant (@USD 750/month)
0B	PMU office set up including 7 laptops, telephone/fax GPS and a projector. Total $12,500
0C	Office supplies
0D	$5,000 for inception workshop; $1,500/year for Project Board meeting related expenditures
0E	Audit costs @$3,000/year; Capacity assessment of implementing partner.
0F	DSA in outer islands for National Project Director, Project Coordinator, DRD and DoF focal points. 23 person-days each year @$60/day
0G	Approximately 1.5% of the PMU budget is allocated for contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel, labor and materials.
0H	Direct Project Services (DPS) refers to project 'execution services' which UNDP provides at the request of government to support the procurement of goods and services,

	recruitments, payments, etc. The services are charged on an item by item basis against UNDP's Universal Price List (UPL). The estimated breakdown of the DPS is as follows: • Recruitment, HR management and administration, and salary payments of CTA: $11,385 • Recruitment of 31 short-term positions envisaged in the three components of the project as well as M&E related consultants: $16,058 • Other payments (based on experience from NAPA-I project): $843 • Travel authorization (based on experience from NAPA-I project): $3,104 • Procurement of equipment/materials (with values over $30,000) – five items: $4,565 • Procurement of equipment/materials (with values less than $30,000) – 21 items: $5,670

5 MANAGEMENT ARRANGEMENTS

The project will be executed according to UNDP's National Implementation Modality (NIM), as per the NIM project management implementation guidelines agreed by UNDP and the Government of Tuvalu.

Project Management Structure and Responsibilities
The information below presents a brief description of the roles and responsibilities of the entities involved. The project organization structure is presented at the end of the section.

Implementing Partner (IP). At the national level, the Ministry of Foreign Affairs, Trade, Tourism, Environment and Labour (MoFATTEL), will act as the Implementing Partner (Project Executive) of the project. MoFATTEL has assigned the Department of Environment (DoE) to undertake day-to-day implementation activities of the proposed LDCF project. Based on the standard NIM procedures, the MoFATTEL will be responsible for the overall project and reporting to UNDP Fiji Multi-Country Office. The DoE will establish a Project Management Unit (PMU) in Funafuti with a full time National Project Coordinator and other core project staff. The PMU will liaise with Responsible Parties to the project and other stakeholders to support the implementation of the three Components of the project. The Project Executive (MoFATTEL) will appoint the National Project Director (NPD). The NPD will be supported by the National Project Coordinator within the PMU.

Responsible Party. The MoFATTEL will designate two responsible parties to implement two Components of the proposed project: The Department of Fisheries (DoF) within the Ministry of Natural Resources (MNR) will be the Responsible Party for Outcome 1; and The Department of Rural Development (DRD) within the Ministry of Home Affairs and Rural Development (MoHARD) will be the Responsible Party for Outcome 3. The Memorandum of Understanding between the MoFATTEL and the respective departments is provided in Annex 14. For Output 2.2, which requires continuous on-site support throughout the course of activities, the IP agreed that no suitable government agencies have physical presence in outer islands and thus an NGO should be selected as a service provider. Thus, according to the UNDP NIM guideline, an NGO will be selected during the inception phase of the project based on a competitive procurement process undertaken by the IP.

As described in the MoU between MoFATTEL and MNR, and MoFATTEL and MoHARD, to ensure smooth collaboration and coordination between the MoFATTEL and Responsible Parties, the DoF and DRD has agreed to appoint a senior government official (Director level) as the primary interface of their respective Departments with the DoE.

Project Board (PB). The PB is responsible for making management decisions for a project in particular when strategic guidance and decisions are required. The PB plays a critical role in project monitoring and evaluations by assuring quality of the project's processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the National Project Coordinator and any delegation of its Project Assurance responsibilities. Based on the approved Annual WorkPlan, the Project Board can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans.

In order to ensure UNDP's ultimate accountability for the project results, Project Board decisions will be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with the UNDP Project Manager (i.e. UNDP Fiji MCO). Potential members of the Project Board are reviewed and recommended for approval during the Project Appraisal Committee (PAC) meeting. Representatives of other stakeholders can be included in the Project Board as appropriate. The Project Board contains three distinct roles, including:

An Executive: individual representing the project ownership to chair the group. This will be a most senior official from the ministerial level MoFATTEL, Tuvalu.

Senior Supplier: individual or group representing the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. This will be a Representative from UNDP that is held accountable for fiduciary oversight of LDCF resources in this initiative. The UN Country Development Manager based in Tuvalu will represent UNDP.

Senior Beneficiary: individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries.
Most important party in this group will be a high level representative of DRD who is the custodian of the outer island administrations and a senior representative from a Tuvalu NGO network.

Specific responsibilities of the PB:
Defining a project
- Review and approve the Initiation Plan (if such plan was required and submitted to the Local PAC).

Initiating a project
- Agree on Project Coordinator's responsibilities, as well as the responsibilities of the other members of the Project Management Unit;
- Delegate any Project Assurance function as appropriate;
- Review the Progress Report for the Initiation Stage (if an Initiation Plan was required);
- Review and appraise detailed Project Plan and Annual Work Plan, including Atlas reports covering activity definition, quality criteria, issue log, updated risk log and the monitoring and communication plan.

Running a project
- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the Project Coordinator;
- Provide guidance and agree on possible countermeasures/management actions to address specific risks;
- Agree on Project Coordinator's tolerances in the Annual Work Plan and quarterly plans when required;
- Conduct regular meetings to review the Project Quarterly Progress Report and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans.
- Review Combined Delivery Reports (CDR) prior to certification by the Implementing Partner;
- Appraise the Project Annual Review Report, make recommendations for the next Annual WorkPlan, and inform the Outcome Board about the results of the review.
- Review and approve end project report, make recommendations for follow-on actions;
- Provide ad-hoc direction and advice for exception situations when project manager's tolerances are exceeded;
- Assess and decide on project changes through revisions;

Closing a project
- Assure that all Project deliverables have been produced satisfactorily;
- Review and approve the Final Project Review Report, including Lessons-learned;
- Make recommendations for follow-on actions to be submitted to the Outcome Board;
- Commission project evaluation (only when required by partnership agreement)
- Notify operational completion of the project to the Outcome Board

Specific Responsibilities of Executive (as part of the above responsibilities for the Project Board)

- Ensure that there is a coherent project organisation structure and logical set of plans
- Set tolerances in the Annual Work Plan and other plans as required for the Project Coordinator
- Monitor and control the progress of the project at a strategic level
- Ensure that risks are being tracked and mitigated as effectively as possible
- Brief Outcome Board and relevant stakeholders about project progress
- Organise and chair Project Board meetings
- The Executive is responsible for overall assurance of the project as described below. If the project warrants it, the Executive may delegate some responsibility for the project assurance functions.

Specific Responsibilities of Senior Supplier (as part of the above responsibilities for the Project Board)
- Make sure that progress towards the outputs remains consistent from the supplier perspective
- Promote and maintain focus on the expected project output(s) from the point of view of supplier management
- Ensure that the supplier resources required for the project are made available
- Contribute supplier opinions on Project Board decisions on whether to implement recommendations on proposed changes
- Arbitrate on, and ensure resolution of, any supplier priority or resource conflicts

The supplier assurance role responsibilities are to:
- Advise on the selection of strategy, design and methods to carry out project activities
- Ensure that any standards defined for the project are met and used to good effect
- Monitor potential changes and their impact on the quality of deliverables from a supplier perspective
- Monitor any risks in the implementation aspects of the project

Specific Responsibilities of Senior Beneficiary (as part of the above responsibilities for the Project Board)
- Ensure the expected output(s) and related activities of the project are well defined
- Make sure that progress towards the outputs required by the beneficiaries remains consistent from the beneficiary perspective
- Promote and maintain focus on the expected project output(s)
- Prioritise and contribute beneficiaries' opinions on Project Board decisions on whether to implement recommendations on proposed changes
- Resolve priority conflicts

The assurance responsibilities of the Senior Beneficiary are to check that:
- Specification of the Beneficiary's needs is accurate, complete and unambiguous
- Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target
- Impact of potential changes is evaluated from the beneficiary point of view
- Risks to the beneficiaries are frequently monitored

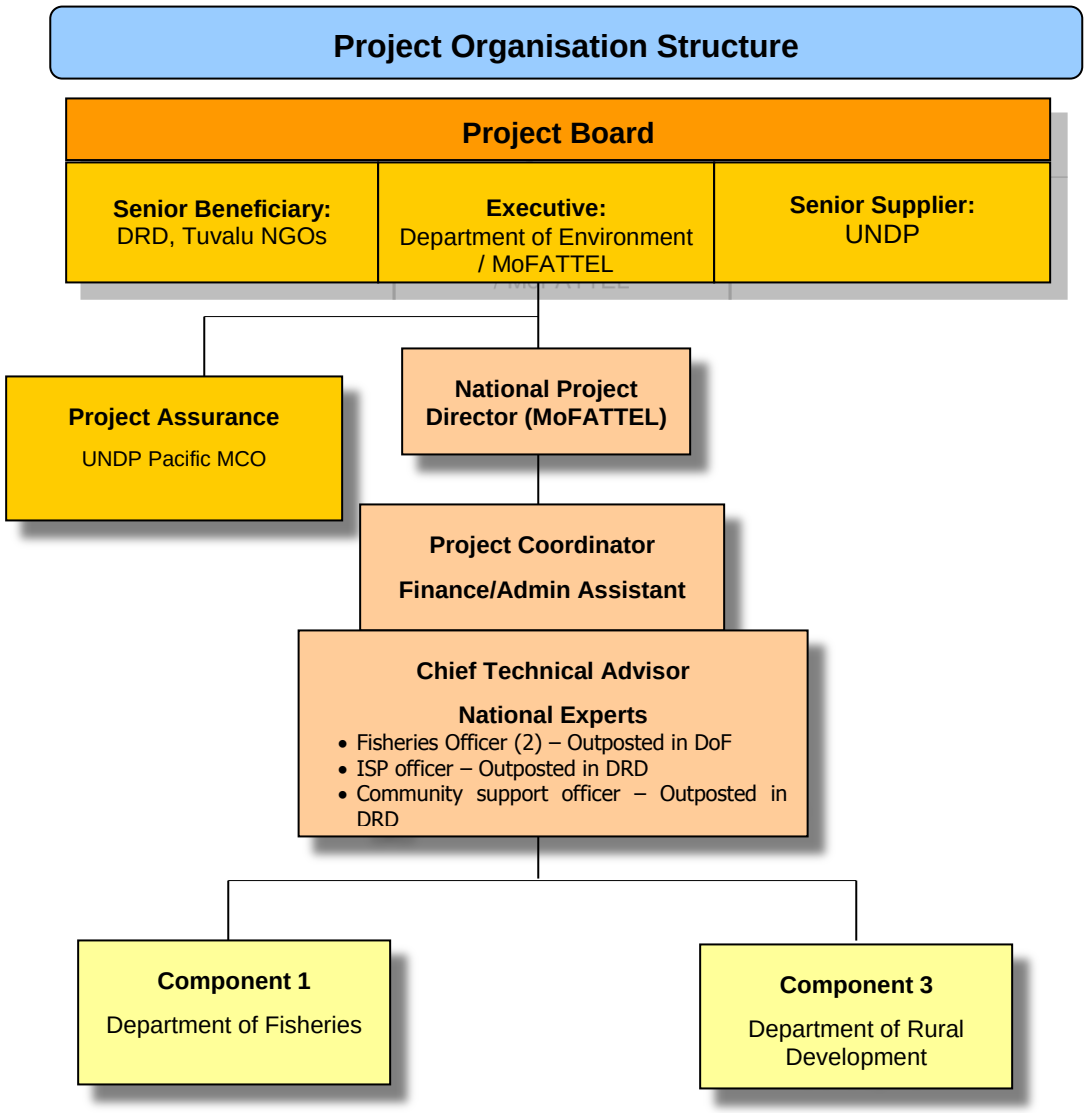
Project Management Unit (PMU): The PMU will be based in Funafuti within DoE. It will consist of a National Project Coordinator and finance/administrative assistant. The PMU will amongst other tasks, i) develop Standard Operating Procedures for project implementation, ii) develop Quarterly and Annual WorkPlans and Budgets, iii) provide financial and administrative management support, iv) prepare Quarterly and Annual Financial and Technical Progress Reports to be submitted to the DoE, and v) ensure compliance with applicable UNDP/GEF/LDCF/Government rules and regulations.

National Project Coordinator: The Project Coordinator has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

Technical Expert: The project will hire an international Chief Technical Advisor and national experts to provide technical expertise to the project. The project will also hire two national Fisheries Officers, one ISP Officer and Community Support Officer. The Fisheries Officers will sit within the Department of Fisheries and ISP and Community Support Officers will sit within the Department of Rural Development.

Terms of References of key project staff and experts are provided in Annex 9.

NGOs/CSOs
It is foreseen that NGOs will play an important role in implementation of specific activities. A list of Tuvaluan Association of Non-Governmental Organisations (TANGO) with either a national capacity or presence on specific outer islands is therefore provided in Annex 7.



Audit arrangements
Audits will be conducted in accordance with the UNDP NIM Audit policies and procedures, and based on UN Harmonized Approach to Cash Transfer (HACT) policy framework. Annual audit of the financial statements relating to the status of UNDP (including GEF) funds will be undertaken according to the

established procedures set out in the Programming and Finance manuals. The Audit will be conducted by a special and certified audit firm. UNDP will be responsible for making audit arrangements for the project in communication with the Project Implementing Partner. UNDP and the project Implementing Partner will provide audit management responses and the Project Coordinator and Project Management Unit (PMU) will address audit recommendations.

UNDP Country Office Support Services

As per standard agreement between UNDP and the Government of Tuvalu, and upon request from the Implementing Partner (IP), UNDP Fiji MCO may provide the following support services to the IP, and recover the actual direct and indirect costs incurred by the MCO in delivering such services:

- Payments, disbursements and other financial transactions
- Recruitment of staff, project personnel, and consultants
- Procurement of services and equipment, including disposals
- Organization of training activities, conferences, and workshops, including fellowships
- Travel authorization, Government clearances ticketing, and travel arrangements
- Shipment, custom clearance, and vehicle registration.

For more information, see Budget Note item 0H in Section 4.1. The estimate for UNDP Country Office Support Services presented in Budget Note item 0H will be validated and recorded in a Letter of Agreement before the inception of the project.

6 MONITORING FRAMEWORK AND EVALUATION

The project will be monitored through the following M&E activities. The M&E budget is provided in the table below. The M&E framework set out in the Project Results Framework in Part III of this project document is aligned with the AMAT and UNDP M&E frameworks.

Project start:
A Project Inception Workshop will be held within the first 3 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

The **Inception Workshop** should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the LDCF related AMAT set out in the Project Results Framework in Section III of this project document, and finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule PB meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first PB meeting should be held within the first 12 months following the inception workshop.

An **Inception Workshop report** is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly:

- Progress made shall be monitored in the UNDP Enhanced Results Based Managment Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc... The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually:
Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).

- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR

Periodic Monitoring through site visits:
UNDP CO and the UNDP GEF region based staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle:
The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation expected to be in May 2015. The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the mid-term evaluation cycle.

End of Project:
An independent Terminal Evaluation will take place three months prior to the final PB meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the terminal evaluation cycle. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

Learning and knowledge sharing:
Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. There will be a two-way flow of information between this project and other projects of a similar focus.

Audit:
The Project will be audited in accordance with UNDP Financial Regulations and Rules and applicable audit policies

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Coordinator ▪ PMU ▪ UNDP CO, UNDP GEF	Indicative cost: $5,000	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Coordinator will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members ▪ PMU	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Coordinator ▪ PMU ▪ Implementation teams	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project coordinator ▪ PMU ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Periodic status/ progress reports	▪ Project coordinator and team	None	Quarterly
Mid-term Evaluation	▪ Project coordinator ▪ PMU ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: $38,500 Remuneration: Travel cost:	At the mid-point of project implementation.
Terminal Evaluation	▪ Project Coordinator ▪ PMU ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost : $38,500	At least three months before the end of project implementation
Audit	▪ UNDP CO ▪ Project Coordinator ▪ PMU	Indicative cost per year: $3,000 ($12,000 total)	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly for UNDP CO; as required by UNDP RCU
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US$ 94,000 (+/- 5% of total budget)	

Communications and visibility requirements

Full compliance is required with UNDP's Branding Guidelines. These can be accessed at

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

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

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

7 LEGAL CONTEXT

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the Standard Basic Assistance Agreement (SBAA) and all CPAP provisions apply to this document.

Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

- put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP/GEF hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

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

- Revision of, or addition to, any of the Annexes to the Project Document;
- Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- Inclusion of additional Annexes and attachments only as set out here in this Project Document

8 ANNEXES

Annex 1: Current and Future Climate of Tuvalu

Annex 2: Fisheries Vulnerability Profile

Annex 3: Pacific Catastrophe Risk Assessment And Financing Initiative, Country Risk Profile: Tuvalu

Annex 4: Summary of Stakeholder Consultations Held During the Project Preparation Phase

Annex 5: Consultation Survey Results

Annex 6: Inception Workshop Report

Annex 7: Capacity Assessment of Implementing Partners

Annex 8: UNDP Risk Log

Annex 9: Staffing, key sub-contracts, International Technical Assistance and Terms of References

Annex 10: Co-Financing Letters

Annex 11: Component 1 Technical Annex

Annex 12: Component 2 Technical Annex

Annex 13: Logistical Arrangement: the “Project Metronome”

Annex 14: Memorandum of Understanding with Implementing Agencies

Annex 15: UNDP Environmental and Social Screening