REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The Appendixed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

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ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular Project
Country/ies:	Federated States of Micronesia (FSM)
Title of Project/Programme:	ENHANCING THE CLIMATE CHANGE RESILIENCE OF VULNERABLE ISLAND COMMUNITIES IN FEDERATED STATES OF MICRONESIA
Type of Implementing Entity:	RIE
Implementing Entity:	SPREP
Executing Entity/ies:	Office of Environment and Emergency Management (OEEM) on behalf of Kosrae State Government, Pohnpei State Government, Yap State Government, Chuuk State Government
Amount of Financing Requested:	$8,967,600 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

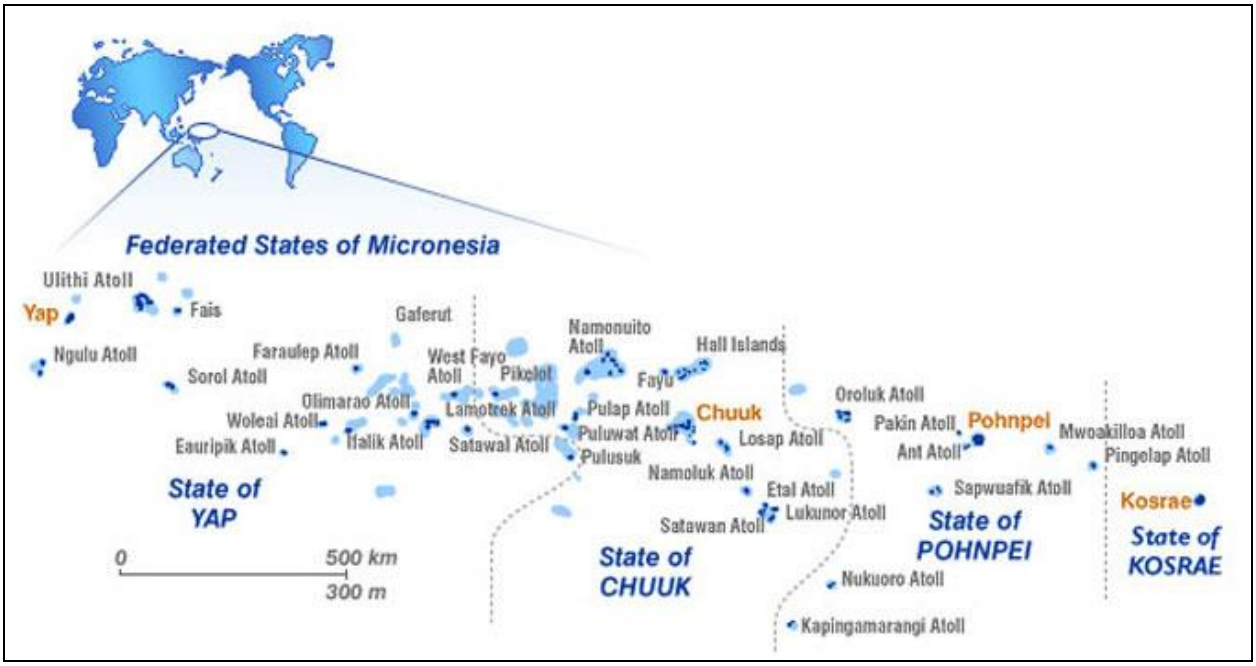
1. Background

1.1 Geography and People

The Federated States of Micronesia (FSM) (Figure 1) is a group of approximately 607 islands covering 2,736 km^2 in the western Pacific Ocean. These islands vary from small islets that disappear at high tide, to atolls and large volcanic islands with land area of more than 80 km^2. Approximately 65 of the islands are inhabited. The country is comprised of four states − Chuuk, Kosrae, Pohnpei and Yap − which each have a considerable degree of autonomy.

The indigenous population of the nation, which is predominantly Micronesian, consists of various ethnolinguistic groups. It has a mostly Pacific Islander and Asian population, comprising Chuukese 48.8%, Pohnpeian 24.2%, Kosraean 6.2%, Yapese 5.2%, Yap outer islands 4.5%, and a minority number of Asian, Polynesian and other expatriate people. A sizeable minority has Japanese ancestry as a result of intermarriages between Japanese settlers and Micronesians during the Japanese colonial period. English has become the common language of the government, and for secondary and tertiary education. Outside of the main capital towns of the four FSM states, the local languages are primarily spoken. The State of Chuuk accounts for roughly half the total population.

Figure 1 Map of the Federated States of Micronesia



1.2 Social and Economic Features

The Strategic Development Plan (SDP) for FSM provides a road map for social and economic development for the 20 years 2004−2023[i]. The SDP and the Infrastructure Development Plan (IDP) both recognise the need for mitigation and adaptation measures to limit the impacts of climate change. FSM developed a Multi-State Hazard Mitigation Plan in 2005, and in 2009 a national Climate Change Policy was adopted. The country developed a combined Policy for Climate Change Adaptation and Disaster Risk Management in 2013. This is being implemented through State Joint Action Plans for Climate Change and Disaster Risk Management. The Office of Environment and Emergency Management (OEEM) is the focal point for all government climate change activities. Some of the features of the country are highlighted in Table 1.

Table 1: Summary Geographic, Socio-Economic and Demographic Features

Geographic coordinates	Lat. 1° S to 14° N, long. 135° W to 166° E
Total land area	702 km^2
Length of coastline	6,112 km
Exclusive economic zone	2,980,000 km^2
Population (2011 estimate)	102,360
Population forecast (2015)	100,609
Annual population growth rate	−0.4%
Population density	146 per km^2
Access to improved water supply (2006 estimate)	94%
Access to improved sanitation facilities (2013 estimate)	26%
Human Development Index	0.645

Source: EU-GCCA, 2013

While each state has its own strategic development plan, Kosrae is the only State with a climate-responsive Strategic Development Plan (2013−2024). The SDP recognises that "the most prudent approach to addressing effects of naturally occurring events (climate change or disaster risks) long term would be to divert development and settlement along the coast to inland and higher grounds" (SDP 2013−2024, p. 29). The Environmental Results and Targets No. 6 states that by 2023 capacity is strengthened at all levels to climate change adaptation, and management and mitigation of risks of disasters enhanced so that communities are resilient to impacts of climate change and disaster risks. Resilience to climate change is also included within strategies for agriculture.

FSM currently has no national strategy for coastal zone management. The State of Kosrae, however, is the first state to develop a strategic plan that addresses coastal zone management in view of the adverse impacts of climate change. Kosrae has a Shoreline Management Plan (SMP), first developed in 2000 and revised and updated in 2014 (Ramsay et al., 2014). The SMP sets out the principles for coastal development in Kosrae over the coming decades, and details *eight key strategies* for increasing the resilience of Kosrae's coastal communities. Taking on board lessons and practices from the Pacific Adaptation to Climate Change programme (PACC) and other coastal projects, this proposal aims to upscale and replicate lessons learned and best practices

through guidance of these eight strategies of the SMP for Kosrae. The eight key strategies are:

(i) Continued development and strengthening of community awareness including outreach activities with a focus on effective natural coastal defence and Kosrae-relevant climate change impacts and adaptation options.

(ii) Amendment of the Kosrae Island Resource Management Authority (KIRMA) Regulations for Development Projects to incorporate climate change considerations and strengthening of regulation implementation to support successful long-term risk reduction and adaptation.

(iii) Over the next one to two generations the primary coastal road network and associated infrastructure currently located on the beach/storm berm is developed inland away from long-term erosion and coastal inundation risk.

(iv) Ensure new development (property, infrastructure) is located away from areas at risk from present and future coastal hazards or is designed with coastal hazards in mind.

(v) Implement a program to encourage existing residential property owners to reposition homes away from areas of high risk from present and future hazards. This may be a staged approach over time as homes are routinely replaced or renovated. Objective prioritization of properties most at risk should also be explored.

(vi) Incorporate a grant component in to the housing loan program to help encourage new property to be constructed in areas not exposed to coastal, river floor or landslide hazards.

(vii) Commence community and state discussions to develop a relocation strategy and identify potential approaches to support relocation from areas exposed to coastal hazards where no alternative land is available.

(viii) A strategic approach is adopted for the ongoing provision of coastal defences. These should be considered only where it is sustainable long-term option, or where it is accepted as a transitional approach to protecting areas over the short to medium term to enable relocation strategies to be implemented.

The mainstays of the FSM economy are subsistence farming and fishing. There is limited tourism due to lack of access and facilities, although it has increased in recent years with a number of small hotels opening in Pohnpei, Yap and Kosrae. Geographic isolation and poorly developed infrastructure are major impediments to FSM's economic growth, and poverty is among the highest in the Pacific region. FSM has, in general, made only limited progress towards achieving the Millennium Development Goals by 2015.

The public sector plays a central role in the economy, the national and state-level governments employ over half of the country's workers and government services and public enterprises account for 38% of GDP. Since the 1995 Economic Summit, the private sector has been a focus of economic development. There are now 22 private locally owned construction companies that also undertake road maintenance.

1.3 Vulnerability to Climate Change

FSM is particularly vulnerable to the impacts of climate change. It lies in the path of tropical storms, typhoons and droughts that are presently modulated by the El Nino Southern Oscillation. Future climate projections suggest, with very high levels of confidence that FSM will be adversely impacted by increased annual mean temperatures, and extremely high daily temperatures (refer to summary of climate risks below). This is coupled with high confidence projections of more extreme rainfall events.

This vulnerability poses serious development challenges, especially for the remote low-lying island areas and atolls. The risks of flooding and inundation seriously threaten coastal sources of livelihood, infrastructure, including existing coastal protection structures. All communities and infrastructure in the atolls and low-lying coastal zones of volcanic islands are exposed to these risks and are therefore highly sensitive to sudden events. The absence of adaptation measures will mean that vulnerability of the communities will increase as the projected impacts of climate change increase over time.

Ocean acidification is expected to continue (very high confidence). The risk of coral bleaching will increase in the future (very high confidence). Sea level is observed to be rising at 28-36mm/decade (Pohnpei tide gauge) exacerbating coastal erosion and placing at risk human communities in coastal areas of atoll islands and islets.

The biophysical environment and geomorphology of the islands whilst highly vulnerable to climate change have some natural land formation processes that may persist under current sea level conditions should natural systems be allowed to function without human influences. The mostly inhabited islets of FSM are composed of sedimentary accumulations of calcium carbonate (CaCO3) sands and cobbles derived from the skeletal fragments of reef dwelling organisms including coral and various carbonate-secreting algae. Some sediment is loose, and others are lithified by natural cements. Loose sedimentary deposits may be transported in various directions (seaward, lagoon ward, or along the shore) and re-deposited on the island surface by storm overwash and winds. Some researchers hypothesize that the tendency for high energy wave and tidal forces carry sediment from the reef margin into island interiors which often result in the topography of these islands to alter and hence adapt to sea level rise (accreting in response to rising sea levels). The islet “landform” might thus persist under a regime of accelerated sea level rise associated with global warming, if natural systems are allowed to operate unabated. Other researchers speculate that atoll islets are “fixed” onto the reef by rock ramparts and when rising waters breach these cemented deposits on oceanic shores, the islet will become unstable and rapidly erode. Either way, there is a sensitive balance between ecosystem dynamics, the health of the marine environment, human settlement patterns and coastal resource use. The climate change risks scenarios for FSM outlined below are expected to exacerbate not only environmental concerns, but impact on the social and economic sources of livelihoods for these atoll and island communities.

In addition to the climate-related impacts, there are increasing stresses placed on coastal zones and coastal infrastructure from local development activities. These non-climate factors add to and compound the climate and sea-related risks to low-lying atoll

islands and the coastal zone infrastructures of the high volcanic islands of each of the four states. The following non-climate related issues are problems that this project aims to address holistically through addressing and abating climate risks:

- Shoreline mining: a lack of affordable building material has encouraged communities to mine coastlines and reefs for sand and gravel, reducing the natural shoreline protection function and leading to shoreline erosion. This is more apparent in outer atoll islands.
- Lack of water security measures that include sanitation practices in outer islands in response to drought: in particular water harvesting systems designed to capture, store and purify water for whole-of-island system consumption.
- Poor coastal zone management and planning, including design and engineering of coastal infrastructure: for example, there are no land or shoreline use regulations, or associated building regulations/codes, road design has not taken account of sediment movement patterns or run-off, leading to problems with erosion and flooding.
- Poor governance of the coastal zone for all island types, with a lack of protective legislation and poor enforcement of regulations where they exist.
- Incoherent and inconsistent agriculture and food security programs that fail to consider climate and transportation risks in its techniques, practices and plans.

1.4 Summary of Climate Change Risks

The future for FSM does not look favourable for any development that is based on a business as usual approach. In the current period to 2100, according to PCCSP and PACCSAP (Australian BoM and CSIRO, 2011, 2014); the latest global climate model (GCM) projections and climate science findings for FSM indicate that:

- Surface air temperature and sea surface temperature are projected to continue to increase (very high confidence)
- El Niño and La Niña events will continue to occur in the future (very high confidence), but there is little consensus on whether these events will change in intensity or frequency;
- Average annual rainfall is projected to increase (medium confidence), with more extreme rain events (high confidence);
- Drought frequency is projected to decrease (medium confidence);
- Ocean acidification is expected to continue (very high confidence);
- The risk of coral bleaching will increase in the future (very high confidence);
- Sea level will continue to rise (very high confidence); and
- Wave height is projected to decrease in December–March (low confidence), and waves may be more directed from the south in June–September (low confidence).

A number of studies suggest that global warming could accentuate the current climate regimes and the changes that come with ENSO events (e.g. Hay and Pratt, 2013). This will mean that the inherited and natural coping strategies that the inhabitants of the atoll islands and the atoll environment of FSM will not be enough to respond to these new climate regimes. It will be an ongoing challenge and burden to maintain and sustain the sensitive balance between ecosystem dynamics, the health of the marine environment, human settlement patterns and coastal resource use.

1.5 Discussions with Coastal Communities

OEEM carried out two sets of consultations with representatives of all the target island communities. This was during May 2014 and June to July 2015. The objectives of the consultations were to systemically identify and subsequently confirm the priorities that project will take up that will improve and enhance the resilience of the coastal village and island communities and their environment. The consultations involved prioritization and ranking of community and island needs to adapt to climate extremes from each of the four states.

This approach ensures that local communities, including men, women, youth, persons with disabilities, are supportive of these identified priorities. The discussions focused on community beneficiaries to identify alternatives or priorities and whether or not these alternatives or priorities take precedence over the initial priorities of the project (prioritization and ranking). Consultations were carried out in all four states. The Kosrae consultations required community views and responses to their vulnerabilities on island, including experiences on hazards, risks, coping strategies and their needs today. These were over and above the prioritization and ranking, output and activity-based discussions.

The stakeholders of the project include local community (farmers, housewives, youth representatives, senior citizens, village food inspectors, landowners, teachers, etc), municipal government representatives (council members, council chairman) and government agencies (department of agriculture, fisheries, environment, island resources management authority, resources and economic affairs, land court, health services, state legislature, transport and infrastructure) and the business community. The summary of the meetings is provided in Section II.H.

1.6 Technologies for Coastal Communities to improve Resilience

The PACC programme piloted a number of coastal adaptation technologies in three other Pacific Island countries that are deemed relevant to be considered under this project. These include coastal geospatial assessment tools developed and used in the Cook Islands, community-based integrated coastal management model in Samoa, and low volume rural road technology applied in Vanuatu.

Cook Islands: In the Cook Islands, the PACC project brought together engineers, climate scientists and the community to discuss the redesign and construction of the harbour. Combining climate analysis with complex engineering approaches, the project developed new tools to help design the harbour:

- A ‘geospatial assessment framework’, to better understand the shape and height of the foreshore, offshore and near shore topography and bathymetry of the coastline of the entire island of Mangaia, which helped understand the climate change impacts of the island and its infrastructure over the next 10 years;
- The Cook Islands Coastal Calculator - a Microsoft Excel worksheet, which provides information on waves and water levels and circulation, including undercurrent, using current variability, frequency and future scenarios. Understanding extreme water levels and wave conditions, how likely they are to behave and react during cyclone and large swell events, and how these two parameters influence wave set-up, wave run-up, overtopping and over-washing at the shoreline, is fundamental in understanding and assessing inundation of land areas, and impacts on other coastal assets.

The tools are suitable for this project as they will assist the community and the project team make informed decisions about the type of development activities and development improvements they are to make at the coastline and shorelines. The Coastal Calculator for example stores all atoll island shoreline data of the Cook Islands and the calculator can easily be uploaded with and apply and provide information on future scenarios for the outer islands of Yap, Chuuk, Pohnpei and Kosrae. The tools thus improve resilience through evidence-based support for decision-making in the design and implementation of the identified adaptation measures.

Samoa: Samoa's community-based integrated coastal protection model has shown key lessons that when learned has potential to increase the resilience of coastal communities and infrastructure to the impacts of climate change. Samoa selected, through and by communities, the option of building a seawall as a priority measure. This was supported by 'soft' adaptation measures such as planting of salt-tolerant coastal plants to create natural barriers along the coast and riversides from ridge to coast. Lessons from the model shows that while a community priority may be a popular option, ground truthing through better planning and evaluation of all possible options must always be carried out. A full understanding of coastal science, coastal hazards and climate risks for example must be undertaken. Specifically, detailed understanding of the surrounding coastal and watershed environment and flood conveyance routes will need to be considered in the coastal engineering planning, monitoring and evaluation. This should include coastal and flood risk modelling, and climate and sea level projections. Another important lesson is better investment in awareness raising among decision makers, including communities, of climate change and its impacts, and especially the range of measures available to reduce vulnerability. When decision makers understand the climate risk, and the options to reduce the risk, they will make informed and better decisions.

Samoa's lessons have been used in the design of the FSM project, in particular, the assessments to be undertaken to further ground truth the designs prior to implementation. This will address the cost effectiveness of the project, as well as the sustainability of the project.

Vanuatu: Vanuatu's Epi Island is very similar to Kosrae in terms of impacts and vulnerabilities it faces with its coastal shoreline. Flooding and coastal erosion on the

island have been causing increasing damage to the roads, and the PACC project worked with local communities to develop appropriate solutions that work now and into the future. Following the lack of standard design for rural road networks in Vanuatu, the government developed the *'Vanuatu Resilient Roads Manual 2014 - A design guide for low volume rural roads in Vanuatu based on accessibility, security and sustainability*'. The PACC project trialled the implementation of its relocated roads, using this manual as a guide and the purpose is to develop and promote appropriate methods of road engineering that gives the best possible access to communities at minimum cost.

In the absence of a "Kosrae Standards" for its roads, lessons from the development of the Vanuatu manual, along with ADB climate-proof roading manual that guided the PACC project; will enhance the resiliency of the roading infrastructure program of Kosrae now and into the future

The nature and success of coastal interventions to enhance resilience to impacts of climate change are, as shown by examples from Cook Islands, Samoa and Vanuatu; very site-specific. The activities of this project that address coastal resilience would base it's design and implementation against this backdrop of experiences given the similar circumstances, vulnerability, capacity, state of the natural environment, economy and certain social aspects of FSM.

1.7 Best practices and lessons learned for Water & Food Security for Communities to improve Resilience

The following Table shows a summary of country experiences and practices that have improved resilience and reduce vulnerability to threats in the water and food security and food productions sector from the Pacific. These are accepted or prescribed as being correct or most effective (i.e., best practices)[1]. This project would refer to and consider these interventions to improve the selection and implementation of activities that will provide the most effective, efficient, sustainable and more relevant approach to improve resilience of communities to climate change.

COUNTRIES IMPLEMENTED	**KEY ACTIVITY - WATER**
Marshall Islands, Nauru, Niue, PNG, Tokelau, Tonga, Tuvalu	Capturing and storage of rain and groundwater resources (individual household and community storage capacities)
BEST PRACTICE EXAMPLE : TUVALU Target Island: Funafuti atoll | Target community: Lofeagai | Target pop: 637 | 97 households, female 323, male 314	

[1] The PACC publication series have been reviewed to ensure all information about on-the-ground demonstration activities of the project are best practices (http://www.sprep.org/pacc/publicatoins/technical-reports). Lessons learned have been captured in the Experience series of the project and is available online in the same address as well.

Activity: Built a water harvesting system using church building roof as water catchment, with guttering and downpipes. Capacity: 700,000 L ground cistern compartmentalized. Community ownership 100%. Management plan between government and community to alleviate drought risks. Replication on Tekavatoetoe community and church with a capacity of 288,000L storage system succeeded. Launched July 2014.

Impact: 90% of the Lofeagai and Tekavatoetoe population now have access to the minimum water supply of 40 L per household per day during dry periods and droughts,

COUNTRIES: Fiji, Palau, PNG , Solomon Islands

FOOD SECURITY. Development and use of climate-resilient crop species and varieties (resilient to drought, water logging, saltwater, pests), including techniques for their consistent supply (germplasm collections, nurseries)

BEST PRACTICE EXAMPLE : SOLOMON ISLANDS

Target island: Ontong Java atoll | T/communities: Luaniua, Pelau | Land area 12km^2 | Target pop: 2,800 | 394 households | 3 most impacted areas by hazards : Water supply, food gardens, loss of land (village cemetery)[2]

Activity: Demonstrated 4 'atoll permaculture' systems from setup, farming, harvesting and distribution. Features mixed cropping and agroforestry, self-mulching, self-regenerating and low-maintenance aspects. The system used salt-tolerant, disease-resistant, quick-maturing crops; raised beds to protect against saltwater intrusion; good seed supply system setup, and organic manure instead of chemical fertilisers. Also pest and disease control and quarantine; and emphasising improving soil health.

Impact: 100% farmer ownership. The demonstration plots encouraged independent farmers to setup their own. Sustainable farming systems – maintenance of soil health, efficiency use of water, respect and promotion of biodiversity, good yields under current climate variability.

Challenge: Shortage of planting materials. 'Enthusiasm is easily lost if planting material is not available'. Trainings in skills such as 'rapid multiplication' to keep up with demand in volume of planting material for interested farmers [3]

1.8 Previous Pilot Project Experience

The PACC project in Kosrae identified a 7 km section of the road in the Tafunsak municipality which was being progressively damaged by flooding from heavy rains and high tides. The original road had been designed to withstand a maximum hourly rainfall of 178 mm. Analysis of climate and sea level data, and projections to 2050, concluded that the road should be redesigned to withstand maximum hourly rainfall of 254 mm.

[2] Vulnerability and adaptation (V&A) assessment for Ontong Java Atoll, Solomon Islands. Apia, Samoa : SPREP, 2014., pp 14

[3] PACC Demonstration Guide: Piloting climate change adaptation in food production and food security on low-lying atolls of Solomon Islands. Apia, Samoa: SPREP, 2015.

Following a socio-economic assessment, community consultations, and input from expert coastal engineers, the road was redesigned and rebuilt to withstand the anticipated heavier rainfall and higher sea levels. Adaptations included raising parts of the road by up to one and a half metres, fitting larger culverts, and improving drainage. The improved road was officially opened in May 2014. The PACC developed guidelines to share experiences with climate proofing the road, which will help others to replicate this success.

The project also installed tide gauge and rainfall gauges in 2011 to improve availability and quality of local climate and sea level data. These now feed into climate-sensitive decision making and development for the state. The project team based in KIRMA also promoted the mainstreaming of climate risk into all development in the state and the country. The team supported development of the Kosrae State Climate Change Act, which was endorsed in 2011; and amendments to Kosrae's Regulations for Development, which now require all development projects to consider the potential impacts of climate change. The team also contributed to the revision of the 2014 Kosrae Shoreline Management Plan that provides comprehensive strategies for building resilience of Kosrae's coastal communities and infrastructure and now will guide this project.

1.9 The Proposed Focus Area

The FSM's 607 islands are scattered over almost 3 million square kilometres of the Western Pacific Ocean. Its islands range from high volcanic to smaller, flat coral atolls and raised coralline islands. The proposed atoll islands for the projects strategic intervention within Yap, Chuuk and Pohnpei States are identified in Table 2, 3 and 4 below. The selection of the 6 locations and the Malem municipality in the State of Kosrae has been carried out through careful selection of the degree of vulnerability of the islands, as well as minimizing duplication of projects being carried out by other the national and state government programs and projects.

Yap sites. Yap is the western-most island chain of the FSM. It consists of about 78 islands of which 22 are populated islands with a total land area of only 118 km^2 with geology that is non-volcanic in origin. The four major islands are Yap, Gagil-Tomil, Maap and Rumung. Colonia is the capital of Yap State. The central business district of Yap is built around a harbour, the shoreline of which is armoured by well designed and engineered walls and revetments. The CBD administers both the main island and 14 atolls reaching to the east and south for some 800 kilometres, namely Eauripik, Elato, Fais, Faraulep, Gaferut, Ifalik, Lamotrek, Ngulu, Olimaarao, West Fayu, Pikelot, Sorol, Ulithi, and Woleai atoll, and Satawa atoll. Yap is well developed and has a generally high quality of life. The 2010 state-wide population was 11,377 with a population density of 37 km^2.

The proposed atoll islands for intervention within Yap State are summarised in Table 2. The atoll islands of Eauripik and Woleai are nominated for soft coastal engineering interventions based on clear advice from the state government through government stakeholder consultations and endorsed by communities through community

consultations (Section II.H). The recent impacts caused by Typhoon Haiyan were felt very strongly at these islands and emergency assistance needed to be shipped to the communities there, where major tidal inundation occurred.

Woleai - is one of two atoll islands that the project will focus its interventions on in Yap State. It is a coral atoll of twenty-two islands located approximately 108 kilometres (67 mi) northeast of Eauripik. The population of the atoll was 975 in 2000[4] on an area of 4.5 km^2 (Table 2), which is significant compared to other outer islands as it holds the record for the largest population of the outer island groups of Yap. A large section of the southern atoll is partially exposed to the open ocean. The composition of the atoll environment is composed largely of coral ridge and shallow banks on a broad reef setting. With a depth of 30-50m, the 29km^2 lagoon is divided into the eastern and western basins.

Eauripik - the second Yap location located 108km southwest of Woleai consists of 3 islands with an area of 0.236 km2 with the highest level of elevation of only 2 meters. Eauripik has a population of only 113 (as of 2000). The atoll environment is composed of broad outer reefs that enclose a deep and narrow central lagoon.

The two islands are highly vulnerable to tidal surges and in recent events, the king tides of 2008 in particular. It caused significant damage to its coastal infrastructure, food resources and housing of the two islands. The recent impacts caused by Typhoon Haiyan were felt very strongly at these islands and emergency assistance needed to be shipped to the communities there, where major tidal inundation occurred. The proposed adaptation actions to respond to these hazards and to prepare the islands for future changes are soft coastal engineering interventions outlined in the project components and financing table below.

Table 2 Proposed Project Areas: Eauripik atoll, Woleai atoll – Yap State

Yap State	Eauripik	Woleai
Population: Male | Female	113: 42 | 71 (2000 census)[5]	975: 452 | 523
Atoll location and situation	Latitude: 6.690, Longitude: 143.045, Total land area: 0.236km^2. Total atoll area: 11km x 3km dimension, southern most atoll of Yap	Lat: 7.350, Lon: 143.870; Consists of: 18 islands Total land area: 4.5km^2; Total atoll area 29km^2 with a figure-of-eight outline 11.5x 2-7km dimension

[4] 2000 FSM Census of Yap
[5] Ibid, 2000

Figure 2 Eauripik atoll (satellite imagery, source: https://web.archive.org, accessed 27 July 2015)

Figure 3 Woleai atoll (satellite imagery, source: https://web.archive.org, accessed 27 July 2015)

Chuuk State - comprises of high islands and many low-lying coral sand islets with a total land area of 127.43 sq.km. There are approximately 100 islands of which 43 are inhabited and are scattered over an ocean area of 777 km wide and 1,554 km long. The main population centre of Chuuk State is the main Chuuk Lagoon, an archipelago with about 7 mountainous islands within it surrounded by a string of islets on a barrier reef. The two major geographical divisions of the Chuuk Lagoon are Faichuuk, the western islands, and Namoneas, the eastern islands. The 53,106 population includes several additional sparsely populated outer island groups, including the Mortlock Islands to the southeast, the Hall Islands (Pafeng) to the north, Namonuito Atoll to the northwest, and the Pattiw Region to west. The Pattiw Region includes the islands of Pollap, Tamatam, Poluwat, and Houk.

Most of the roads and transportation systems are poor or in disrepair. These are regularly inundated by daily tides. No climate proofing of roads takes place. Potholes in the coastal road of the business district of Chuuk are often filled with either saltwater at high tide or runoff that cannot drain due to the low elevation. The tidal surges of 2007 and 2008 caused significant damage to coastal infrastructure, food 37 resources, and housing. On July 2, 2002, heavy rains from Tropical Storm Chataan caused more than 30 landslides that killed 47 people and injured dozens of others in the state's deadliest weather disaster. The landslides occurred throughout the day, some within just minutes of one another. It is apparent that investment in Chuuk already scheduled to refurbish the main road and buried infrastructure is committed and planned for immediate ground breaking. Unfortunately, the pace of climate change has already made some design elements of these large infrastructure projects out of date.

Adding to the elevation of the main road in Chuuk would likely permit avoidance of significant drainage problems related to sea-level rise for a period of years to decades depending on the amount of adjustment. The addition of 0.5 meters to the roadbed, and incorporation of enhanced drainage features, will likely pay dividends in flooding avoidance for a few decades.

The two islands chosen to implement this project are located in the southern most group of islands known as the 'Lower Mortlock' group. The southernmost atoll known as Satawan and the neighbouring Lukunor atoll (located northeast of Satawan) were identified by the Chuuk State government stakeholders and communities (Section II.H) to be highly vulnerable to climate related risks to the people's water and food sources and livelihoods, as well as the natural marine resource environment.

Satawan – is home to a population of 955 (2001 census). With a combined land area of almost 5 square kilometres, the atoll is dotted with islets that are often quoted to be 30 to 90 islets. The island vegetation is limited and the main staple food crops are coconut (*Cocos nucifera*) and breadfruit (*Artocarpus altilis*). The island is highly vulnerable to tidal surges, droughts and typhoons and with accelerated sea level rise, the island's food and water are becoming issues of security that must immediately be addressed.

Lukunor - is the second site for Chuuk, located 8km to the northeast of Satawan is home to a much lesser population. This is because the youth leave the atoll to attend primary and tertiary schools in Satawan. Lukunor and Satawan face the same risks and threats from climate extreme events. This atoll is often exposed to submergence and or awash as a result of its very active coastal environment.

The proximity of Satawan and Lukunor to each other is one of the key reasons why the two islands have been selected. Their nearness within each other and their distance from the main Chuuk Island and Chuuk lagoon will mean that a whole domain approach of group of islands isolated will be addressed effectively. The focus interventions will be more targeted, effective and efficient given the distance and costs and benefits of the intervention from the main source and supplier island of Chuuk.

Table 3 Project Proposed areas: Satawan and Lukunor atoll, Chuuk State

Chuuk State	Satawan atoll	Lukunor atoll
Population: Male | Female	955: 485 | 470	150, N/A
Atoll location and situation	Lat: 5.400, Lon: 153.600; Total land area: 4.59km^2. Total atoll area is 400km^2 with 32km x 13km dimension	Lat: 5.520, Lon: 153.760; Total land area: 2.8km^2 – 18 islets in total Total atoll area 55km^2, 13.5km x 39km dimension

Figure 4 Satawan atoll (satellite imagery, https//web.archive.org, accessed 27 July 2015)

Figure 5 Lukunor atoll (satellite imagery, https//web.archive.org, accessed 27 July 2015)

Pohnpei - Pohnpei is a "high" volcanic island, having a rugged, mountainous interior with some peaks as high as 760 meters. It measures about 130 kilometres in circumference and is roughly circular in shape. Pohnpei Island is the largest, highest, most populated, and most developed island in FSM. A coral reef surrounds the island, forming a protected lagoon. There are no beaches on Pohnpei – the coast is surrounded by mangrove forests/stands growing on muddy substrate eroded from interior wetlands in the rainy environment. Several smaller islets, many of them inhabited, lie nearby within the lagoon-reef complex. The population of Pohnpei is approximately 34,840. Pohnpei is more ethnically diverse than any other island in the FSM. This is largely due to it being home to the capitol of the national government, which employs hundreds of people from the other FSM States having distinct ethnic and cultural origins.

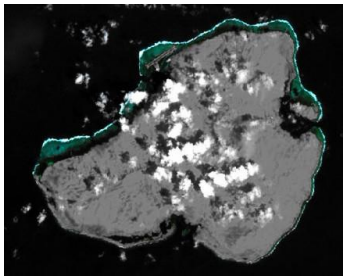
The indigenous makeup also includes people from the outer islands within the State, which comprise multiple regional ethnicities. Outer islands in Pohnpei include Pingelap, Mokil, Ant, Pakin, Ngatik, Nukuoro, and Kapingamarangi. These are atoll islets that suffered extreme hardship during the marine inundation events of 2007 and 2008.Typhoons rarely hit Pohnpei; more often they are spawned in Micronesia and move on to Guam and the Commonwealth of the Northern Marianas Islands. Every several years or so (on average), a mildly damaging tropical storm or depression will affect Pohnpei.

Strong El Niño events can cause prolonged drought of many weeks or even months, as was seen in 1997-1998. The tidal surges of 2007 and 2008 caused significant damage to coastal infrastructure in low-lying areas. Without a specific plan to manage coastal problems, Pohnpei shoreline areas will lack a degree of resiliency, resources will be exposed to depletion, and improvements through investment may be outpaced by the scale of climate change unless a specific plan is developed.

The proposed atoll islands for intervention within Pohnpei State are identified in Table 4. On outer atoll, the islands of Nukuoro, and Kapingamarangi are nominated for soft coastal engineering interventions based on clear advice from the communities in the community consultative meetings (Section II.H), the State Governor and key government stakeholders. These islands were the focus of the Sustainable Land Management (SLM) project with a circa US$25,000 per island investment on

sustainable land management practices. The project would build on the practices carried out by the SLM project in particular, how to isolate and sustain soils through farming practices such as raised taro patch beds.

Table 4 Proposed Project Areas: Pohnpei selected islands and Kosrae Island

	Pohnpei State		**Kosrae State**
Islands	Kapingamarangi	Nukuoro	Kosrae Island
Population.; Male | Female (2000 census)[6]	474: 245 | 229	362:178|184	7,686: 3,859 | 3,827
Island location and situation	Lat: 1.065, Lon: 154.770, 302 km, south of Nukuoro, most southernmost atoll group. Total land area: 1.8 km^2, atoll area of 74 km^2, 12km x 8km dimension	Lat: 3.845, Lon: 154.940; 475 km SW of Pohnpei. Total land area: 1.7 km2. 44 islets, Total atoll area is 40 km^2. 8km widest diameter.	Lat: 5.300, Lon: 162.980, Volcanic island with a fringing reef. Total land area: 110 km^2.15km x 13 km dimension The island comprises a narrow, low-lying coastal strip of swamp and mangrove forest that rises via gentle slopes and valleys to a rugged, eroded, mountain interior reaching 629 m above sea level at Mount Finkol[7].
			

Kosrae - The island of Kosrae is the easternmost island in FSM. Kosrae is a 112 km^2 volcanic island surrounded by mangroves and coastal strand forests that have been historically used for lumber and fuel by residents. There is a shallow fringing reef

[6] 2000 FSM Census of Pohnpei and Kosrae
[7] https://web.archive.org/web/20101018092314/http://oceandots.com/pacific/caroline/kosrae.php

spotted with boulders of limestone quarried from the fore-reef by high-energy wave events (storms, tsunamis, and other overwash processes). There are no outer islands.

The island has steep, heavily vegetated watersheds with unstable slopes. Intense rainfall denudes exposed soil in areas of deforestation. Invasive vegetation is prolific and has taken a foothold in very watershed. The population of approximately 7,686 is largely dependent upon fishing and farming for their livelihood.

Kosrae has unique needs with regard to climate risk management and adaptation. The majority of the coastline is experiencing chronic erosion, in places related to engineering projects that have 38 caused down-drift sediment deficiencies over the past four decades. Additional causes of erosion include offshore mining of the reef flat for construction materials, beach mining for sand and gravel resources, and interruptions to alongshore sediment transport by engineering projects; in some areas erosion is occurring for reasons that are not entirely known but are probably, in part, related to sea-level rise. The widespread “telescoping” of erosion along the coast by armouring, and beach loss in front of seawalls and revetments, has produced a chronic deficiency in sand that formerly constituted beautiful beaches ringing the island. These beaches lent protection to coastal communities, ambience to tourism and a quality of life to residents that is at risk. The maximum overwash elevation of the recent tide surges is likely to be reached in future events with greater frequency. Generally, designing structures such that overwash may run beneath the structure increases community resilience. Buildings with their lowest horizontal structural component set above the maximum elevation of the December 2008 overwash plus 1 meter will be less prone to damage and more resilient to recovery. The maximum overwash elevation, plus 1 meter, represents a base flood elevation (BFE) for new construction and for renovation of existing buildings.

In 2009, Kosrae undertook the Pacific Adaptation to Climate Change (PACC) project that focused on coastal zone management and specifically the ‘climate proofing’ of a section of island road. The choice of project was influenced by earlier work under the Asian Development Bank (ADB)-funded Climate Adaptation in the Pacific (CLIMAP) project in 2005, which identified the need for climate proofing of the road, and carried out various assessments and analyses, but did not complete the on-the-ground work.

CLIMAP identified the need to complete the Tafunsak to Walung section of the Kosrae circumferential road as it was vital transport route for the people and directing location of other infrastructure development. The community and travelling public will continue to benefit in building resiliency to climate change, as the road has been designed to withstand current and future impacts of climate and sea.

One of the key lessons of the PACC project was the ability to utilize climate science information to influence the design of the roads. For example, the CLIMAP analyses found that the original road design had been based on inaccurate rainfall data, i.e. they had not accounted for increases in rainfall in the design and engineering. The road had been built with drainage works designed for a maximum hourly rainfall of 178 mm, which supposedly had a return period of 25 years. An analysis of more reliable data indicated that an hourly rainfall with a return period of 25 years is 190 mm. By 2050, however, the hourly rainfall with a 25-year return period is projected to increase to

254 mm as a consequence of climate change. Based on these results some aspects of the road design were amended, specifically the culverts were redesigned to accommodate the higher rainfall.

The proposed project area of Kosrae – Malem municipal community inland road development (Figure 6) of which the Malem-Yeseng inner road section and the transitional coastal protection schemes at Mosral and Pal are planned to be carried out under this project (Component 3) will follow a similar approach and learn from lessons of the PACC project. The intervention will be guided by the principles and approaches outlined by the Kosrae Shoreline Management Plan 2014.

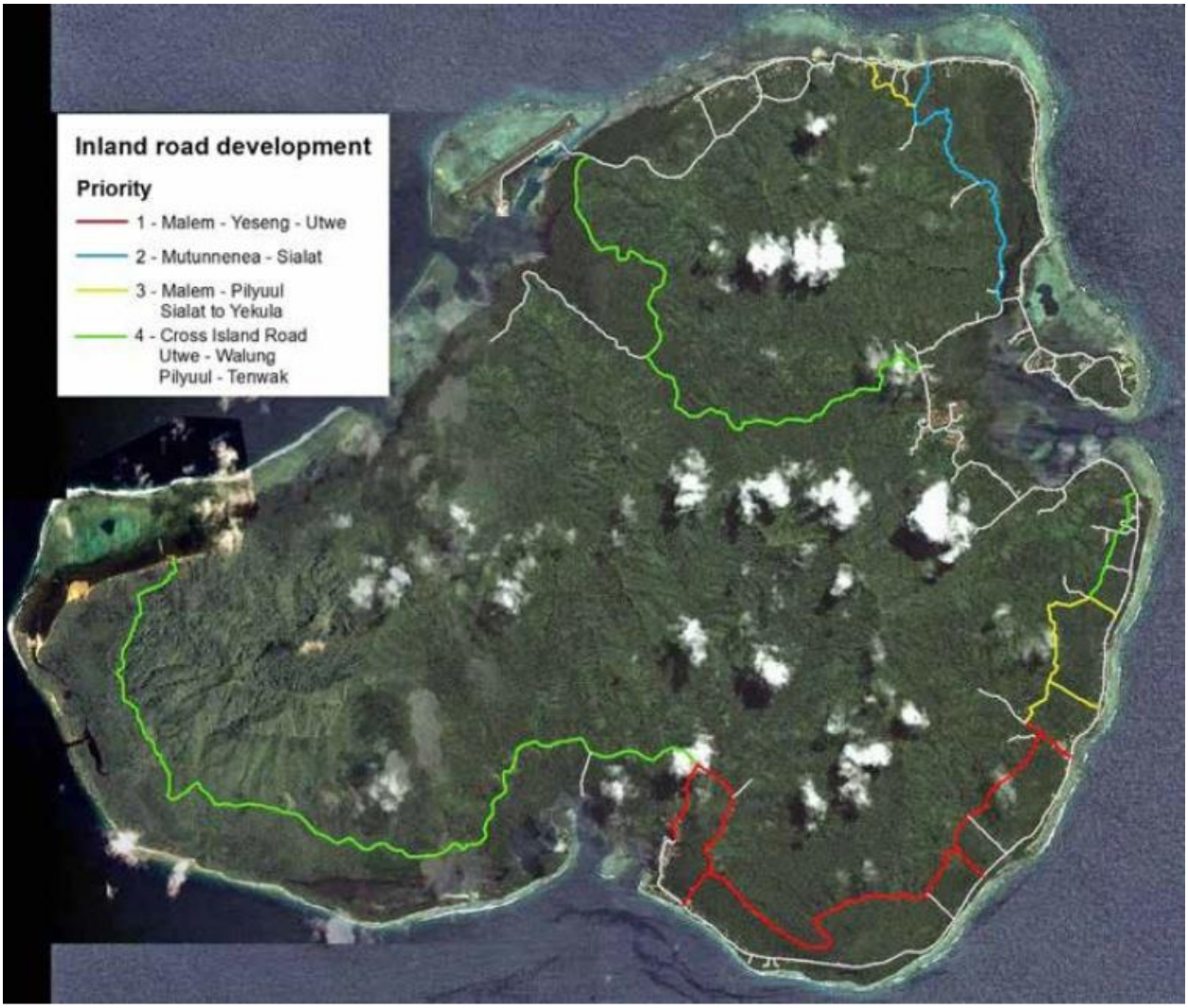


Figure 6 Priority section (Malem – Yeseng – Utwe) inland road development in Kosrae, denoted in red. (Source: KIRMA, 2014)

The beneficiary populations of this project will be the entire Kosrae population. The specific and immediate and daily beneficiaries, however, will be the Malem and Utwe municipal village communities. According to the 2000 census, the Malem population was 1300 with males 663 and females 637 and the number of households at 238. The Utwe population stands at 983 on the 2000 census and was composed of 458 males

and 525 females. Twenty three percent (23%) of the Utwe population is high school age. These potential beneficiaries, coupled with about 90 employed by National Government require daily access to go to the only high school located in Tofol and to the government administration district in Tofol.

There are other potential beneficiaries, approximately less than 100 people who reside in Walung municipal. Walung village community does not have access to the main roads of the island. Everyone at present uses boats to travel to Tafunsak. The only road from Walung to the rest of Kosrae is via Utwe and ultimately this will be the only road to Walung as the road south from Tafunsak is now suspended due to the Yela area being protected. In essence there are two out of five villages reliant on the road access as the only connection to the rest of Kosrae including the health services, ports, etc.

Transportation: Efficient and effective

The Kosrae proposed project area is crucial in terms of efficiency of road transportation versus transportation by boat. The option of travelling by boat from Utwe to Lelu (as it occurs from Walung to Tafunsak) is often very difficult as it would be travelling on the windward (rough) side of the island.

Tourism: reliant on access to Utwe

One dive operator (Kosrae Village Resort) operates primarily out of Utwe while most tourist operators require access to the Menke ruins hike, Mt Finkol hike, Sipian and other waterfalls in the Utwe-Walung Marine Park.

Culture: Access to traditional lands

Malem village was traditionally located at Kupluh that is located southwest of the current location on the volcanic part of the island prior to Missionaries arriving and mobilized everyone closer to the coast. As such, there is the long desire by Malem local administration to upgrade, and develop the inland road to improve access to people's land which has limited vehicular access at present.

Social need: Desire to relocate inland

Following the KSMP 2014, there is a strong realisation that relocation will need to occur over time and best way to do this is in a staged approach over 1-2 generations as people may come to realize the need to rebuild in and upland.

Project / Programme Objectives:

List the main objectives of the project/programme.

Project strategy: The project strategy is to provide all four (4) State Governments in FSM with development planning tools and institutional frameworks to help coastal communities prepare and adapt for higher sea levels and adverse and frequent changes in extreme weather and climate events. These tools and frameworks may include national, state, island, municipal, community and sector plans, policies, regulations, guidelines, standards and protocols.

FSM developed a Multi-State Hazard Mitigation Plan in 2005, and in 2009 a national Climate Change Policy was adopted. The country advanced the policy to a combined Climate Change Adaptation and Disaster Risk Management Policy in 2013. The State of Kosrae, however, is the first state to develop a strategic plan that addresses coastal zone management in view of the adverse impacts of climate change.

The Kosrae Shoreline Management Plan (2014) states: *'*much development on Kosrae over the last two to three generations has occurred in low-lying coastal areas… many of the approaches we presently use… will be increasingly ineffective or unaffordable as sea levels rise. It will involve thinking differently than we have done in the past, particularly concerning where we locate infrastructure, our communities and our homes'.

The provision of these instruments therefore would entail government endorsement at the highest level to ensure application and compliance at every development intervention level, as well as a capacity programme to meet capacity gaps that may hinder the expected outcomes of the project. The approval of these newly revised instruments will be carried out at the highest level (i.e. State Cabinet and State Legislature).

Project goal: The overall goal of the project is to build social, ecological and economic resilience of the target island communities of FSM and reduce their vulnerabilities to sea level rise and other climate risks through coastal resource and development planning, and by promoting gender perspectives and ecologically sound climate resilient livelihoods.

Project objective: The overall objective of the project is to strengthen the ability of FSM to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner. In achieving this objective, the project will support (at the national, state, island, municipal and sector levels) the implementation of the recently endorsed 2013 FSM Policy on Disaster Risk Management and Climate Change Adaptation.

The proposed project will contribute to relevant outcomes and outputs of the Adaptation Fund Strategic Results Framework (AFB/EFC.2/3 from 31 August 2010), and corresponds particularly to the following higher order fund-level objectives as follows:

PO1. Prepare the necessary institutional and regulatory frameworks, policies, guidance and “tools” to help deliver a climate resilient FSM

PO2. Mainstream climate resiliency and long term coastal planning into State wide development plans.

PO3. Provide communities with the necessary strategies and partnership plans and infrastructure to help relocate from high risk coastal inundation sites.

PO4. Capture and share the local knowledge produced on climate change adaptation and accelerate the understanding about the kinds of interventions that work in island environments in FSM

PO5. Implement priority projects on Kosrae to help contribute towards the delivery of the Kosrae Strategic Development Plan and the Kosrae Shoreline Management Plan (SMP2014)

PO6. Introduce “transitional planning” livelihood security measures (including the integration of marine management with soft coastal engineering techniques, climate resilient taro planting techniques and groundwater protection techniques) to help 6 outer atoll islands

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well defined interventions / projects.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
Component 1. Strengthening institutional capacity for coastal zone management	Output 1.1 Legislation and policy paper to guide regulation of climate resilient coastal and marine management for each FSM State	1.0 Capacity developed for efficient and effective support at national level to deliver climate resilient policies and enforce regulations for the coastal zone.	150,000
	Output 1.2 Approved Shoreline Management Plans (SMPs) for Yap, Chuuk and Pohnpei States		600,000
	Output 1.3 Coastal Development and Environmental Policy Guidelines developed for each State		150,000
	Output 1.4 Establish climate resilient engineering and construction (building) standards and protocols for future coastal infrastructure construction within each FSM State		175,000

Component 2. Integrated approaches for Coastal Zone Protection for Yap, Chuuk, and Pohnpei	Output 2.1 Six integrated soft coastal adaptation interventions completed on 6 atoll islands in Yap, Chuuk and Pohnpei.	2.0 Improved resilience of Yap, Chuuk, and Pohnpei coastal communities to climate change	2,750,000
Component 3. Kosrae Shoreline Management Plan priority intervention measures	Output 3.1 Intervention A: New road section construction (Malem to Yeseng) plus access routes to the two villages.	3.0 Increased resilience of Kosrae coastal communities to climate change	2,150,000
	Output 3.2 Intervention B: Transitional coast protection schemes at Mosral and Pal		750,000
Component 4. Knowledge management and capacity development for improved understanding on climate change impacts on the coastal zones and enhanced involvement of stakeholders	Output 4.1 Knowledge management plan covering all FSM beneficiaries to improve awareness levels and facilitate informed decision making to address risks to coastal zones and environment	4.0 Capacity and knowledge enhanced and developed to improve management of coastal zones to adapt to climate change	110,000
	Output 4.2 Knowledge products for national use for all coastal communities pooled in and tailored to local contexts		345,000
	Output 4.3 Local and National Level Workshops, Learning & Trainings		625,000
6. Project/Programme Execution cost			499,175
7. Total Project/Programme Cost			7,805,000
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			663,425
Amount of Financing Requested			8,967,600

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	April 2016
Mid-term Review (if planned)	June 2018
Project/Programme Closing	March 2020
Terminal Evaluation	June 2020

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

The overall goal of the project is to build social, ecological and economic resilience of the target island communities of FSM and reduce their vulnerabilities to sea level rise and other climate risks through coastal resource and development planning, and by promoting gender perspectives and ecologically sound climate resilient livelihoods.

Component 1. Strengthening institutional capacity for coastal zone management

The project will be building on a legislative and policy framework that the national government and the state of Kosrae have already put in place. FSM adopted a national policy on climate change in 2009 and a policy on Disaster Risk Management and Climate Change Adaptation in 2013. Kosrae adopted a Shoreline Management Plan in 2014. There is now a need for capacity to support adaptation at the national level, and specific legislation, regulation and policy frameworks in the other 3 states so that they can deliver effective climate resilient measures for greater protection in the coastal zones.

Output 1.1 Legislation and policy paper to guide regulation of climate resilient coastal and marine management for each FSM State

Activity 1.1.1 National and State Legal and Regulatory Policy assessment

A thorough legal and regulatory policy assessment shall be undertaken to assess the most practical

institutional approaches to support climate resilient coastal management for FSM nationally and within each State. Lessons from Kosrae that were learned under the PACC programme will be applied where possible and if appropriate.[8] The findings will help identify legal, regulatory and policy opportunities and approaches that will be applicable at State, Municipal and Outer island levels.

Activity 1.1.2 Review of regulatory inspection procedures, protocols and enforcement

[8] PACC experiences are documented in the Technical Report and Experience Series found online at http://www.sprep.org/pacc/publications

A review of defined regulatory inspection procedures and protocols will be undertaken along with improved clarity on the regulatory responsibilities within the government structures and on ways to improve enforcement performance. A detailed consultation and participatory stakeholder engagement exercise, along with a desk review of existing information will be conducted and shall culminate in a detailed "road map" and implementation action plan for the national government. This will accentuate climate resilient mainstreaming within government processes and that it is adhered to and promulgated. The findings shall feed directly into the design of terms of reference (ToR) for the delivery of Outputs 1.2, 1.3, and 1.4.

Output 1.2 Approved Shoreline Management Plans (SMPs) for Yap, Chuuk and Pohnpei States

Activity 1.2.1 Review baseline data and information on coastal environment

A thorough review of the existing baseline information, knowledge and understanding of the coastal environments, including coastal behaviour, groundwater conditions, shoreline dynamics and coral reef dynamics of each island selected in each of the three States will be carried out. This will require analysing atoll geomorphological, hydrodynamic and ecosystem modelling studies as well as ecological assessments that exist. Where data do not exist, carry out new field data assessments on coastal and shoreline processes. Analysis of findings from observational surveys and results from any similar program initiative (government, donor or other) as well to help identify strategic or most vulnerable areas and coastlines to future flood, erosion and inundation risks. A recent workshop carried out by local NGOs and a US based science team for outer islanders of Yap focusing on marine resource management will provide important baseline information.

Activity 1.2.2 Assess the socio-economic and ecological developments of the coastal areas

Define the coastal features of each island in each State including the assets and communities most at risk, the social and economic benefits and social issues relating to any future relocation issues to the main island / capital / central business district of the three States. A detailed description of current and proposed (within five years) developments for each State's coastal zone will be developed. This will include the production of coastal vulnerability and resilience maps for each State and associated atoll islands. Information on the current problems, such as erosion, flood prone and flood risk areas, and future land use planning/zoning will also be attempted. The information provided here will allow the project to measure the influences on the coastal

zones by looking comparatively at the 30-year climatological period in the past and in the future (i.e. – use of model results).

Activity 1.2.3 Draft the Shoreline Management Plan for each State and endorse at the highest government level.

Solicit support once again from all relevant stakeholders and draft an SMP for each State. The executing groups of the project in each of the three States will be responsible for drafting their State SMP. The main State agency in charge of the project will be the facilitator of this exercise. The structure and purpose guide of the SMPs is provided in Appendix B. Each State SMP will need to be endorsed by the highest government authority to ensure political will and commitment is secured now and in the long-term. Prior to this endorsement, the SMP should be open to island and public examination and consultations. This will improve and enhance versions of the SMP before finalization ensuring a gender-perspective approach is taken, ensuring lessons of gender-sensitized consultations have been carried out.

Output 1.3 Coastal Development and Environmental Policy Guidelines developed for each State

Activity 1.3.1 State specific Coastal Development Guidance Manuals produced

Each manual will be developed with clearly defined objectives, with input at the State level and at the individual island level. It must describe the physical, geomorphological, and important ecological conditions of the coastal zone for the State as defined in the SMP (Output 1.2). It should then provide detailed engineering and other advice for future-proofing of coastal infrastructure and the most vulnerable communities. It will propose methods for enhancing understanding by the general population of potential coastal hazards and associated risks within the context of climate change. This manual will be important in informing the specific content of the Climate Resilient Roads Standards as the climate risk scenarios can be incorporated relevantly into various road transport infrastructure designs.

Activity 1.3.2 State specific Environmental Policy Guidelines developed, reviewed and updated

A set of thorough reviews of existing social and environmental safeguards in each of the States will be carried out. This will include the review of the current EIA regulations and guidelines. The regulations review will focus on development activities in the coastal zone. The existing guidelines review will assess the decision-making procedures, including the allocation of space and approval of licenses for coastal development activities. This environmental policy guideline will ensure guided categorization of

projects, the level of involvement of all stakeholders within the coastal zone, and a focus on coastal structures only within the different coastal environment of the State islands. The environmental policy guideline will be an addendum to current EIA guidelines that acts as standard procedure for the provision of resources for EIA and delivery of coastal adaptation strategies.

Activity 1.3.3 Endorse and adopt the Environmental Policy Guidelines and Manuals

The manuals (from 1.3.1) and guidelines including reguatlions (from 1.3.2) will be presented before a number of joint sessions of the State Technical Working Groups for critical reviews, and following from that, present each State document before a national validation workshop for finalization and adoption by the FSM Government. Appendix D identifies the ToR for the production of the Coastal Development Guideline Manual.

Output 1.4 Establish climate resilient engineering and construction (building) standards and protocols for future coastal infrastructure construction within each FSM State

Activity 1.4.1 Coastal Infrastructure Engineering Guidelines guidelines developed and applied

Formulate an FSM specific set of engineering guidelines for climate risk resilient coastal infrastructure that cover sea defences, roads and utilities such as water and electricity, housing and more. The engineering guidelines will be flexible and unique to each island's specific needs, and linked to existing Land Use Planning and Environmental Impact Assessment (EIA) regulations for each FSM State, new National Building Codes, Infrastructure Policies, Infrastructure Maintenance policies, Transport Plans, and to the 2013 Disaster Management and Climate Change Adaptation policy. These guidelines shall be supported by high level political endorsement of the national government. Learning from the PACC project, it is not enough to simply develop guides. These instruments must also be seen to be applied and enforced. This project will set to apply these guidelines, monitor and evaluate the results and challenges, working at both the state and local levels.

Activity 1.4.2 Climate Resilient Roads Standards developed and applied

A separate parallel exercise shall also be carried out (that complements the above) which focuses specifically on the roads sector. Design and develop specific roads standards that shall comply to the State wide SMP policy on road relocation, rebuild, maintenance or relocation inland advice. The Standard will include engineering details required for drainage and construction approaches/materials for "critical road infrastructure" in key areas (as identified in the SMPs). This shall also link directly to the

Coastal Development and Environmental Policy Guidelines (Output 1.3) to enforce the incorporation of climate risk scenarios into road transport infrastructure design. This will allow the latest climate change science and risk information tools available to be used and applied. Details of the "Climate Resilient Roads Standard Team" for each State is identified as a draft Terms of Reference in Appendix C.

Component 2. Integrated approaches for Coastal Zone Protection for Yap, Chuuk, and Pohnpei

This component focuses on upscaling and replicating lessons learned and piloted practices of the ongoing climate change adaptation inititatives within FSM, Micronesia, the PACC project and other ecosystem based adaptation projects from around the Pacific. The island communities of Yap, Chuuk and Pohnpei identified water, food and marine resource management as priority areas (Section II.H) that the holistic and integrated approach will focus on. The capacity for the communities to respond and adapt will be built through training and awareness programes outlined under this component.

Output 2.1 Six integrated soft coastal adaptation interventions completed on 6 atoll islands in Yap, Chuuk and Pohnpei.

Activity 2.1.1 Community inception and awareness workshops and community/island Development Plans developed/strengthened for all six islands.

Project inception meetings and awareness sessions would be conducted with community leaders, men, women and youth. The inception meetings will serve as orientation as well as to solicit community views that will help shape and align the objectives of the project to cultural as well as resource use (and ecological) frameworks. Discussions and meetings will be held to understand diverse community perspectives (including gender specific input), sensitivities towards the coastal and marine environment, and prevalent risks and challenges at the household, island, and community levels. The communities will come together around discussions of major issues they are facing, coping strategies, and improved and alternative livelihood practices that are inclusive of an ecosystem approach. This will form part of the community vulnerability and adaptation assessment that will need to be carried out at the preparation stage of the project.

Based on outcomes of the consultation workshops, the communities will work closely with government and NGO partners that already have close working relationships with them, to develop community development plans or island plans. Some islands may already have these CDPs or IDP (Island development plans) in place that are explicitly linked to State development plans. A combination of baseline findings, adaptation

needs, existing village and island resources, community cohesiveness and municipal government adminstration will be reflected within these CDPs/IDPs. These plans will outline clear roles and responsibilities that will guide the project. It will include plans that the community or islands perceive will improve their resilience and reduce their vulnerability from climate and disaster risks.

Activitiy 2.1.2 Carry out environmental risk assessments

A combined climate risk and EIA process, or environmental risk assessment (ERA; Hyett, 2010)9 requires a project to assess integrated scientific, social and economic information and traditional knowledge about climate risks and risk management; to seek expert judgments about risks and risk management, particularly when baseline information is unavailable; as well as knowledge of perception of risks, and a country's risk tolerance threshold. The project will undertake this where existing EIA guidelines do not consider climate risks. In Kosrae where EIA guidelines have incorporated climate risks, this will prove an important step in safe guarding the environment from hard infrastructure investments as outlined in Component 3. Existing data on ecological and social factors, such as has been collected in the Yap outer islands, will be an important resource.

Activity 2.1.3 Identification and demonstration of adaptative agriculture crops, water harvesting, and coastal marine resource management practices in each State

This activity requires the most resources compared to all other activities. It is at the center of the integrated approach in building adaptive capacity of the community to manage natural resources. This is through improved agriculture practices, water security management, marine resources and coastal infrastructure. The CDPs /IDPs and baseline information would help assess the situation relative to the three integrated priorities that the communities and islands have identified.

Water security has been identified already by all state communities to be an immediate priority that this project should undertake to implement (Section II.H). As such, water harvesting systems are identified once a baseline assessment shows the situation of water for household needs, production, for agriculture (types of crops, irrigation, food gardening techniques). These tasks would be carried out for all the islands. Technologies that have proven to work in other islands (e.g., Marshall Islands, Nauru) such as solar water purifiers, will be introduced and demonstrated in one community on each island, totalling six communities in all six islands10. It will then be upscaled to

[9] Through the ERA the government could require higher standards for physical assets in hazard-prone areas.

[10] One installation will include 14 x Carocell 3000 direct solar desalination units, rain water gutters, an automatic first flush diverter, a 5000L tank The 14 Carocell units would produce an average of 210 Litres per day up to 280

other island communities following successful implementation. Full water harvesting systems that are part of household infrastructures, such as roofing, guttering, downpipes, first flush diverters and water cisterns and water tanks will be assessed as to its applicability. It has worked successfuly in many low-lying atoll islands around the Pacific such as the Marshall Isalnds, Tuvalu, Niue, Nauru and Tokelau - in the face of drought. Climate science shows low incidences of drought for FSM, however, this is with low confidence rating (BOM, 2014).

The agricultural practices that have been trialled in the islands include above-ground / raised taro patches, vegetable growing and plant management program following Typhoon Maysak will be promoted. These included distribution of planting material (banana, sweet potato, taro, breadfruit, cassava and spinach) and vegetable seeds that allow families the opportunity to self produce and become more self sufficient. Crops and vegetables are grown on broad ridge designed embankment structures that protect crops from inundation and salt-water intrusion. Lessons from these practices, and elsewhere (from activity 2.1.3) will be identified, piloted, monitored, evaluated and shared widely, including with cost benefit analysis of the main crops. Government partners such as the College of Micronesia extension services research extension arm have carried out research and continue to monitor the results of these works in FSM. These will continue to provide baseline and new data and information that will assist communities improve their capacities to adapt in the area of food security.

A number of marine resources management and ecological surveys have been conducted by research and NGO organizations from the United States in partnership with regional agencies in the Pacific (SPC, PREL, SPREP) and with communities of the outer islands of all three States. These surveys provide the baseline for informed decision making, and support management decisions with ecological and fisheries data. The marine resource management activities will build on the recommendations from this work and will include collaboratively designing management plans (with the community stakeholders). This collaborative process has been shown to have the greatest success over the long term, with the lowest cost outlay11. Successful management plans in the outer islands have included marine protected areas (MPAs), gear restrictions, seasonal limitations, and species specific regulations, among others. These marine resource management plans which have been implemented successfully will be shared with other neigbouring islands. Communities will work with NGOs, scientists, the EPA, KIRMA and Fisheries departments to identify the technical servies and support needed to develop and implement marine resource management plans on the islands.

Litres on hot days. For a typical roof area of 40m^2, exposed to only 20 mm of rain, the system will collect 800 Litres. (source: PACC Project Nauru, Emergency Water Shelters Project Proposal)

[11] Crane, J. Nicole., 2014. Towards a food secure future: bridging tradition and culture with science to build sustainable ocean management and conservation in the Yap (FSM) outer islands. A workshop bringing together Yap outer island communities, July 7-11, 2014, http://onepeopleonereef.ucsc.edu accessed 07 July 2015

Complementing these activites, **climate resilient soft coastal infrastructure activities** would be identified and constructed with the communities. These may include shoreline vegetation, coral recruitment programmes (for attenuating wave forces, trapping sediments and building habitat for fishes), wetland rehabilitation, fish larval enhancement, temporary groynes and small-scale beach nourishment. The project would construct temporary groynes that are relatively easily put together depending on the level of erosion and growing understanding of seasonal sediment movements. The technical simplicity and low-cost nature of these soft measures and their applications allow local communities to "adapt by learning". Some of these soft engineering approaches are listed in Appendix E as activities that would be implemented through careful consideration by social and environment safe guards and the review process of the project team and communities.

Activity 2.1.4 Supply of agricultural inputs, water conservation equipments and marine management devices

Establishing nurseries and having access to the different germplasm collections available of the crop seed varieties that are accessible and available (e.g., SPC, College of Micronesia Research Extension, etc), coupled with agricultural farming techniques and practices would be facilitated through this project. This will allow men and women of the island communities to practice new methods that lead to food security in the islands during extreme climate events such as drought and typhoons. Integration practices with water conservation reducing dependency on water resources include investing into aquaculture and hydroponics and other forms of proven intensive agriculture practices at household, community groups, and community levels.

The project will facilitate accessibiltiy and availability of water for the household and communities that improve water storage, enhance water quality and efficient distribution to cover the entire population in the target islands (10,715, 2000 census). Activities like community solar water purification, connected to water harvesting and water catchment systems in the natural and man-made environment12. Also the creation of new wells, farm ponds and potable water for livestock, etc. Monitoring of boreholes on the islands will be one of the key activities that will allow the project to monitor impacts on water resources.

In effecting marine protected areas and strengthening marine resource management, the project would construct coral reef and fisheries reserves. Used wooden poles and old floats will mark the outside boundaries of fisheries reserves and no fishing areas.

[12] Man-made environment: physical infrastructures from homes to community buildings such as churches, schools, community halls, etc. The roofs act as water catchment areas. Gutters, down-piping, first flush diverters, durable water tanks that survive the tropical heat, water cisterns, house foundations that act as water storage.

Visible and environmentally friendly markers for the no fishing zones would also be constructed. Fish aggregrating devices (FADS) projects around the Pacific and in FSM have shown positive results. These will also be explored and constructed. Other activities include banning destructive fishing methods, dumping of rubbish on coastal areas, encourage collection of crown of thorns, encourage reef enhancement and restocking progrsm, ban the use of small mesh size nets, provide alternative liveilhiood to suport community undertakings, and develop community or village fisheries by-laws.

Component 3. Kosrae Shoreline Management Plan priority intervention measures

The first priority intervention measure identified in the Kosrae SMP is the construction of the Malem to Utwe road inland. It is to replace the current coastal road with sections that have already been identified by a number of climate-related and engineering assessments, to be unsafe and will disappear in the next one to two generations. Figure 7 below shows the entire priority section in 'red'. This project would construct only a section of this priority measure. Situated along these coastal roads is the coastal community of Malem and at the end of the road the community of Utwe. This project sets out to construct only sections of the new inland road as the existing coastal road is threatened by effects of accelerated sea level rise such as tidal surges, king tides and more. The project will at the same time, following consultations with the communities to develop a strategy that will ensure safe relocation of the people of Malem. An interagency committee would be developed under the project envisaged to assist with an immediate to long-term plan that allows for the safe relocation of homes, communities and business infrastructures. It will involve the commitment and leadership of government housing and development lending institutions13 and other development partners. An important composition of the interagency committee will be the land owners and their contribution to the relocation strategy and plans of the government under the project.

The state government through IPIC and ODA Office is now tasked with the responsibility to develop a plan to address the remaining section of the road to Utwe. Preliminary assessement for the entire Malem to Utwe road is estimated at $9m, therefore the state will need about $7m to complete the remaining section toward Utwe village.

[13] For example, the Housing Renovation Loan Fund Office (Department of Commerce and Industry), Rural Development Office (USDA) that have supported the development of loan-funded housing within the residential active use district (Kosrae State Land Use Plan, 2003 revised edition).

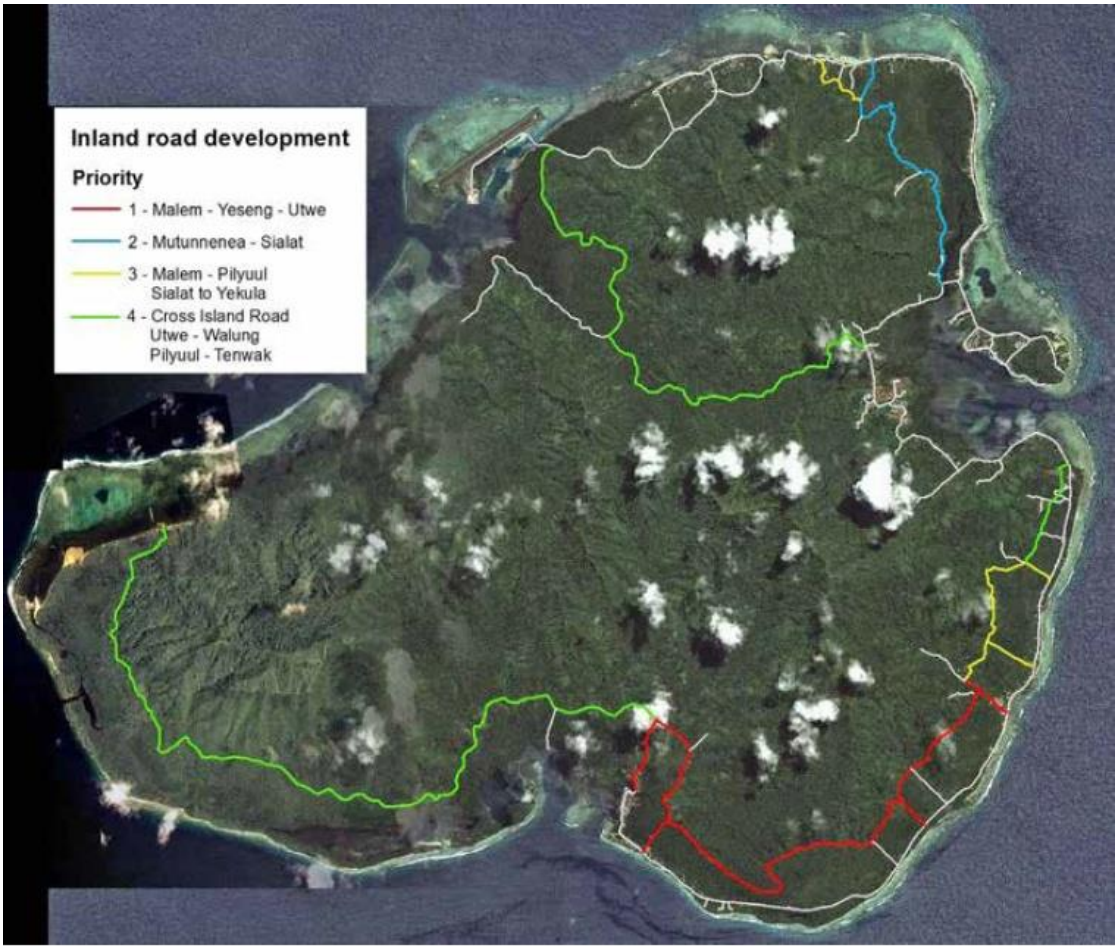


Figure 7 Priority section (Malem – Yeseng – Utwe) of the development of the inland road in Kosrae. (source: KIRMA 2015)

The remaining section of the road (from Yeseng to Utwe) has since been listed in the official government Infrastructure Policy Implementation Committee (IPIC) Project Listing following the government stakeholder consultations in July 2015 (Section II.H). The addition has been enodrsed by the Chair of IPIC (Appendix). This has also meant that the section of the road that the project is developing has been included in the Kosrae Infrastructure Maintenance Fund Project Listing, updated June 2015 (refer Equation 1 and Equation 2 charts). The inclusion in the official government infrastructure listing as well as the maintenance funds listing, secures the sustainability of this project's investment. This means that the investment itself will be made resilient to immediate and future climate change threats. It is expected that with this intervention, the community of Malem (with indirect benefits to Utwe community) will have improved its ability to respond to immediate and adverse impacts of climate change on its coastal infrastructure, environment and livelihoods.

Output 3.1 Intervention A: New road section construction (Malem to Yeseng) plus access routes to the two villages.

Activity 3.1.1 Comply with EIA guidelines and 2013 Regulations for Project Developments

The EIA guidelines for Kosrae requires that an Environment Impact Statement (EIS) be developed to address this new intervention and its impact on the environment. One of the important tasks that would be carried under this activity will be Step 5 of the Kosrae EIA Process, which is a public hearing or consultations task14. KIRMA will be leading this process and advice the project accordingly as well as ensure the projects' intervention comply with the 2013 Regulations for Project Developments. The safety and security of the people and environment will be addressed in the immediate and long-term future. This contributes to resilience to climate change by protecting and guarding social and environmental aspects of Kosrae's coastal zones.

Table 5 Planned costings for activities of Component 3

Activity: Road Section	Upgrade existing road (m)	New road section (m)	Total to sub-base wearing course ($)	Total to Hot Mix Asphalt Pavement ($)	Power line upgrade/ installation ($)
Activity 3.1.2 Access: Malem	870		$163,000	$444,000	**$16,300**
Activity 3.1.3 Access: Yeseng	500		$94,000	$255,000	**$9,400**
Activity 3.1.4 Inland: Malem to Yeseng		2000	$746,000	$1,392,000	**$38,000**
TOTAL	**1370**	**2000**	**$1,003,000**	**$2,091,000**	**$63,700**

Activity 3.1.2 Construct the access route inland from Malem

The indicative costs required to construct the access route from coastal road to the inner road is outlined in the above Table 5 above. Stretching 870m, it is expected to require a total of $607,000 USD to clear and seal this length with sub-base wearing

[14] KIRMA, EIA in the State of Kosrae, FSM, 2014.

course and hot mix asphalt pavement. Construction will only be possible once the project receives approval from the government to proceed, subject to EIA Guidelines and Regulations for Development Project 2013 compliancy.

Activity 3.1.3 Construct the access route inland from Yeseng

This activity will follow results and outcome of the EIA and RDP 2013 with indicative costs outlined in the above mentioned Table.

Activity 3.1.4 Construct the new 2,000m road section located inland road from Malem to Yeseng connecting the two access routes

It can be seen that circa US$2.1million is identified for the delivery of Output 3.1. The procurement for construction companies to carry out the work will be carried out by the executing partner in country - KIRMA. SPREP will be providing assistance and oversight into the process to ensure that all procedures and protocols are followed and are within standards and regulations of FSM and those of SPREP. SPREP and KIRMA will ensue a collaborated monitoring of the construction works along with assistance from the Malem municipal government and community.

Activities 3.1.2 – 3.1.4 improves the resilience of not only Malem community, Utwe community but contribute to the economy of Kosrae by supportinbg tourism activities such as mountain climb and track walks, kayaking, diving and more. The investments will provide safer and secure access to public utilities and services by the people and communities residing on this area of Kosrae. It will provide access to the natural features of Kosrae that attract tourists. The roads themselves are made resilience because they will be located away from landslide hazard zones, and with durable safety features that are embedded into the design elements that will allow the road to withstand flooding from extreme rainfall events.

Figure 8 Indicative inland road between Utwe and Malem showing requirements of new and upgraded sections of road

Output 3.2 Intervention B: Transitional coast protection schemes at Mosral and Pal

The activities under this Output shall only be implemented following the acceptance and completion of all necessary KIRMA environmental regulations (EIA etc) as appropriate plus the preparation of clear compliance to a project specific environmental and social impact assessment Plan developed under this project.

Activity 3.2.1 Construct well engineered coastal wall defences at Mosral and Pal road sections

The Kosrae (2014) SMP clearly states that the highest priority for "transitional defences" is the upgrade of the defences at Malem village, and extension of coastal protection to the south along the critically exposed section of road at Pal and at Mosral. The community in Malem discussed this to length during consultation and concluded to agreement on this particular priority (Section II.H). The project will collaborate climate scientists, road engineers, contractors, government and village communities as to the design and construction of the coastal wall defenses at these critical sections. This approach was proven a best practice in the case of Cook Islands climate proof harbour construction15. the project would construct the protection walls and monitor against weather extremes (such as king tides and storm surgest) during the course of the project.

[15] Decision support tools for climate-resilient coastal development: A case study from the Cook Islands Pacific Adaptation to Climate Change (PACC) project. Apia, Samoa: SPREP, 2014.

figure 9 pal section of malem road. mass concrete bags, loose boulders and broken concrete, placed randomly to reduce surge impact and prevent wave overtopping and erosion of road (source of photo: simpson abraham, july 2015)

figure 10 mosral section of malem road. existing dumped concrete rubble here will need to be removed. a proper double layer rock armour (revetment) is required to protect the critically exposed road. a low reef flat breakwater to 'stabliize' shoreline will also be required further south to prevent outflanking and downdrift erosion. ((ksmp, 2014; source of photo: simpson, july 2015)

Location	Length of Defence	Proposed details for discussions (adapted from KSMP, 2014)
Pal	160 m 175 yards	New rock revetment from the southern end of the exiting rock armour along the section where the road is critically exposed. Existing dumped concrete rubble will need to be removed. The revetment should be to the same profile as the upgraded sections to the north with a 1:3 slope, double layer of rock armour, average rock size of 0.66 m (2 feet), and a crest that is 3 rocks wide. Given the proximity of the road a mass concrete wave upstand wall at the landward edge of revetment crest may also be required to ensure wave overtopping is minimised, either now or sometime in the future. The new revetment will need to extend behind the existing shoreline at the southern end to prevent outflanking and further downdrift erosion. However, further retreat of the shoreline will occur at the southern end and some form of additional low reef flat breakwater may also be required to 'stabilise' the shoreline at the southern end of the revetment to prevent further exposure of the road.
Mosral	110 m 120 yards	New rock revetment from the outlet of Infal Mosral tideflex structure along the section where the road is critically exposed. The existing mass concrete bags can be retained with the revetment constructed seaward of them. The revetment should be at a 1:2 to 1:3 slope, double layer of rock armour, average rock size of 0.66 m (2 feet), and a crest 3 rocks wide.

		Given the relatively low- level of the road a mass concrete wave upstand wall at the landward edge of revetment crest may also be required to ensure wave overtopping is minimised, either now or sometime in the future. Outflanking and further downdrift erosion will occur at the southern end of the revetment and some form of additional low reef flat breakwater may also be required to 'stabilise' the shoreline at the southern end of the revetment to prevent further exposure of the road.

Component 4. Knowledge management and capacity development for improved understanding on climate change impacts on the coastal zones and enhanced involvement of stakeholders

Output 4.1 Knowledge management plan covering all FSM beneficiaries to improve awareness levels and facilitate informed decision making to address risks to coastal zones and environment

Activity 4.1.1 Prepare a Knowledge Management and Capacity Development Plan

Building from the CDP/IDPs that the project would develop under activity 2.1.1 and proceedings from the workshops; a knowledge management plan would be prepared. The plan will set out what resources would be required and needed to be disseminated to the targeted stakeholders, including schools. Further what capacity gaps, challenges and opportunities that will need investment to build and sustain resilience during and after the project, i.e., human, financial, equipment, training, scientific knowledge, programming, data, systems, etc.

Output 4.2 Knowledge products for national use for all coastal communities pooled in and tailored to local contexts

Activity 4.2.1 Materials and information captured, reviewed and shared systematically

Resource materials that promote visibility of the project, project lessons, best practices that include poject briefs, brochures, booklets for leaders, pamphlets in english and local languages targeting the communities, success stories that are shared through national and regional newsletters (e.g., SPREP Climate Change Matters) on a frequent basis (monthly) will be designed and shared. Community meetings will be held where scientific data and ecological results will be shared, and used to build knowledge capacity for adaptive management. Key stakeholders will be trained to gather key data to self inform of patterns, trends, collations and comparations of findings. Technical support (science) teams will remain available to advise. These materials and tools will

be used in educating local stakeholders, and targeting children and youth, and in schools in all education levels from primary to tertiary.

The data and information generated, lessons learned and best practices of the project will be captured and developed into products that will be peer-reviewed, scientifically edited and published in journals or online government and regional publication series. The project will learn from the knowledge management process of the PACC project where a Technical and Experience Series16 was established, published, and shared online and in hard copies where possible.

Activity 4.2.2 Technical modules, tools and training materials developed

The project will organize targeted technical trainings for officers and community leaders in all States on soft engineering shoreline management measures. The principles and processes of wetland rehabilitation, fish larval enhancement, temporary groynes and small-scale beach nourishment and recharge, sand groyne structures, land-use setbacks, retention and replanting of coastal vegetation, and preservation of coastal ridges are some examples. Natural resource benefits such as ground water replenishment will be realized through these capacity building activities. The trainings will equip officers to effectively provide support to communities.

Training program and materials for the application of the State wide SMP (Output 1.2) and Coastal Development Guidelines and Manuals (Output 1.3) will be developed by this project. This will allow for refresher trainings to be carried out during and beyond the life of this project, thereby addressing sustainability of the capacity of institutions and people to manage their resources.

Technical software programs will also be developed such as the coastal calculator software program. This will assess the coastline of any island types, volcanic or atoll and overlay climate projections on sea level rise, providing information on wave over topping and run off and inundation. The project will develop this tool based on best practices from the PACC project17. The project will use this information in trainings identified in Output 4.3

Activity 4.2.3 Key Performance Criteria and Indicators developed for staff and departments

[16] The PACC Technical Report Series and the Experience Series can be found online at https://www.sprep.org/pacc/publications. The products can also be found by searching within the regional climate change portal, https://www.pacificclimatechange.net; and the SPREP Information Resource Center and Pacific Environment Information network https://www.sprep.org/pacific-environment-information-network/pein

[17] See https://www.sprep.org/pacc/publications/technical-reports. Technical Report No. 12, Decision support tools for climate-resilient coastal development. A case study from Cook Islands PACC project

The project will review and improve performance appraisal plans at the coprorate and individual levels of departments and agencies that are key stakeholders to the management of natural coastal resources of FSM. It will assess and introduce agreed criteria and standards for achieving key result areas in which performances of departments and individuals are measured agains. Key performance principles such as organizational values, codes of conduct, environmental ethics will be reviewed. Key performance indicators such as environmental leadership, service delivery, knowledge sharing, gender perspectives, valuing people and partnerships will be strengthened or introduced where they do not exist and tailored accordingly. Department protocols and procedures that address staff contracts and third party contractual agreements, terms of references will be revamped against the above mentioned principles and indicators of performances. This activity will be monitored against baseline and implemented during the lifetime of the project.

Output 4.3 Local and National Level Workshops, Learning & Trainings

Activity 4.3.1 Learning & training workshops

The project will carry out a series of planned trainings that will address capacity gaps that will be solicited from stakeholders during inception workshops and meetings. Trainings on tools and frameworks that allow for an effective implementation of policies and guidelines developed. For example integrating gender perspectives into guidelines, plans, policies. Project management tools that were vital in project successes such as monitoring and evaluation, competent-based logical results based framework trainings, work plans, finance and assets reporting. Key trainings on corporate and individual performance measures will also be carried out by the project.

Trainings will be developed to support educators on delivering effective lessons using products and materials created in Activity 4.2.1. Educator trainings will include methods and pedagogies that integrate K-12 student engagement in planned projects and monitoring processes.

Activity 4.3.2 Application and targeted technical workshops

Trainings and learnings on the application of plans and guidelines will be planned and carried out by the project, following training materials and modules developed under Output 4.2. Technical-specific trainings such as the use of soft engineering shoreline management and the use of coastal calculator will be carried out by the project.

Training will also be conducted at the community level on each island for ecological and resource assessments. Fish landings data to assess species, sex and size for management planning is an example. This type of training will help communities make

informed management decisions, and will contribute to adaptive management frameworks that are flexible in the face of resource and ecosystem change. Science technical support will be available for data management and interpretation.

Application-based workshops or on-the-job (hands-on) training will also be in the form of joint inspections and exchange (send or invite) of officers or inspectors to and from other States in FSM. There will be different State enforcement authorities (e.g. KIRMA in Kosrae, EPA in Chuuk, Pohnpei and Yap, Office of Planning and Budget in Yap) involved and taking active participation. The focus will be inspection in changes and improvements in coastal zone management. These include observed impacted changes from environment regulations standards application, future coastal risk management and land use development, sea defense maintenance and physical intervention of authorities and communities.

B. Describe how the project / programme provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project is expected to deliver a holistic ridge to reef, reef to ocean approach to achieving the social, economic and environmental benefits, as well as serve as a model for future replication throughout the Micronesian and Pacific region. The project will promote a set of proven innovations that together with partner institutions / organisations will help create better management of the coastal zones of islands and atolls to adapt to climate change.

The key beneficiaries in the long-term are the men, women, and youth of all coastal communities in FSM. This calculates to a gross population of over 100,000 (based on 2000 population census). Within the lifetime of the project, the immediate beneficiaries will be, for Kosrae; all 7,686 inhabitants. In the outer atolls, it is expected that over 3,020 isolated atoll inhabitants would benefit directly from the project.

The vulnerable groups expected to benefit from this project include:

Women and Youth - The 2000 census finds that the domestic chores and responsibilities at the domestic level in households in FSM are largely owned and carried out by women and youth. It is in the range of 85-90% of the population reside in low-lying coastal areas in volcanic islands such as Kosrae, and 100% in the low-lying targeted atoll islands of Yap, Chuuk and Pohnpei which are highly exposed to climate extreme events. Women and children are therefore highly vulnerable to climate hazards and their impact. The proposed interventions in Yap, Chuuk and Pohnpei, that address water and food security will be targeting and supporting the young and elderly women and youth to adapt.

Crop and Fish Farmers – The benefits from sharing best practices, technology and lessons on crop resiliency and coastal fisheries management will be shared amongst the farmers on land and the fisher men and women that live on the remote outer islands of FSM. The island of Weno in Chuuk has already trialled taro patches on raised beds that have proven to escape sea water intrusion. Lessons from here will assist the project's target island farmers on their crop techniques and practices. The fish farmers, on the other hand, will benefit from the management plans that are based on science and traditional knowledge combined. In Woleai atoll, Yap, closing sections of reefs was a common traditional practice that had conservation and preservation benefits as recent scientific studies have supported.

Business owners and general local consumers: It is anticipated that the livelihood benefits shall include the creation of over 450 employment opportunities across these communities on mangrove planting schemes, coastal protection engineering support and monitoring, community engagement / business diversity opportunities. Micro finance renovation loan schemes such as Palau's successful Renewable Energy Subsidy Loan program would be one of the options that the project will learn from and how it may assist homeowners and land owners in relocating into the new inner roads development. Electricity lines will be installed at the same time it is constructed. This will attract business and general local consumers to naturally and autonomously migrate inland and away from the coastal hazard zones. Stabilization of water and food production before, during and after extreme events will allow more nutritional and balanced food at affordable rates. This will assist in lowering prices of food, allowing the more vulnerable and poor population of FSM to afford food, water and rich-protein food supply consistently over time.

Landowners and Shore owners: Land and in the case of Chuuk, there are Shore owners – will be key beneficiaries to the project. In particular those land owners who are highly vulnerable as a result of loss of their land to the sea. The project will find additional and immediate protection against coastal erosion and flood risk through improved shoreline management policies, plans and programs.

Gender - interventions shall be assessed and an action plan developed to assist the project based on an appreciation of the extent by which the livelihood of people working along the coastal strip is negatively affected by the coastal erosion/accretion within the stipulated time horizon of the study shall be ascertained.

The communication and awareness raising activities will engage local and national media, and will also target the primary and secondary schools in the island communities, reaching out to different generations of the country. For the purpose of the project the term "gender" will focus on women and children living in and deriving an income from the strip of land along the coastal zone.

Socio-economic benefits are introduced through all 3 Components, however, Components 2 (intervention measures for vulnerable atoll outer islands in Yap, Chuuk

and Pohnpei) and Component 3 (specific interventions for Kosrae) shall focus on deliverable and tangible "on the ground" measures which may be used as examples of best practice for later replication around all States. For example, over 7,680 inhabitants of Kosrae are likely to benefit from the intervention measures proposed (direct or indirect benefits) in Component 3. These measures as examples of best practice will also be widely disseminated throughout the Pacific Island Countries and Territories by SPREP through the Pacific Climate Change Portal (http://www.pacificclimatechange.net/).

TYPE OF BENEFITS	BASELINE SCENARIO	KEY BENEFITS
Social benefits	Lack of mechanism to alert deteriorating quality of beach condition and marine resources	Prevented erosion and protected assets in Kosrae for the next 50 years, benefitting over 6,000 island inhabitants in Kosrae.
	Limited awareness about low-cost, feasible shoreline management options	Heightened awareness and enhanced technical capacity to implement and maintain community-based shoreline management techniques
	Subsistence-based farming becoming increasingly difficult along the ocean side of coastal zones due to salt sprays from heightened wave energy Food security issues influenced by increased saline intrusion	Feasibility of coastal schemes maintained/promoted through demonstration of coastal vegetation to specifically address climate resilience.
	Vulnerable households lack access to improved technology	New platforms to grow salt tolerant crops in tandem with coastal protection schemes.
Economic benefits	Traditional coastal protection measures for high risk areas are not cost effective Conventional government or community response to increasing erosion/inundation problem has been either high-cost seawall construction or low-cost but long-term mangrove plantation	2 km of road and 1.37 km of sea defence upgraded/rebuilt on Kosrae. Up to 6 new soft engineering schemes set up and implemented on outer atoll islands in 3 States benefitting almost 1,800 inhabitants.
	Eroding/disappearing beaches negatively affects tourism potential	Increased knowledge on, and capacity to implement, a suit of soft engineering shoreline management techniques Tourism potential promoted in those areas where beaches are nourished or artificial coral reefs are promoted
Environmental benefits	Conventional hard engineering solutions for shoreline management are often associated with negative environmental side effects such as scouring of adjacent seabed and increased erosion in adjacent lengths of coast due to prevented surface runoff	Soft engineering options demonstrated within this project, in particular artificial coral reefs, coastal vegetation and artificial beach recharge, are likely to improve coastal marine ecosystems and species abundance and diversity

In summary, the security of livelihoods at the island community level will be supported by reducing vulnerability of households and businesses to coastal erosion, land loss, and other climate-induced problems which, without this programme, will continue to

adversely affect the populations of the islands. The policy changes introduced in sector plans and capacity building components of the programme will be designed in a way to create an enabling environment that will secure the long-term sustainability of the adaptation measures to be introduced by the programme in the different islands. The national capacity in the provision of climate information services, technical capacity of line departments and their extension/advisory services will be enhanced to provide support to communities in their on-the-ground adaptation measures in the long run.

The expected main benefits of the project are increased resilience to climate change-induced extreme events, protection of vital community assets (both natural and man-made), enhanced food and livelihood security, and social benefits (enhanced awareness of climate change, empowered communities and public institutions through the participatory planning and implementation process, including the involvement of women and youth). The project is expected to deliver the following environmental benefits, among others: improved coastal zone stability, and conservation of coastal, inland and reef ecosystems.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project.

The cost effectiveness of this project is demonstrated through the continuity link with the successful SPREP managed PACC Pilot project that is being completed for Tafunsak (Kosrae - due for completion by December 2014). The PACC project at Tafunsak has been the most ambitious and probably the most effective approach towards pursuing the mainstreaming of climate change adaptation, not only in Kosrae State, but more broadly in Micronesia and across the Pacific. The PACC project to date, in Kosrae, has not simply contributed to a series of policy drafting exercises, but has also actively facilitated collaborative programming, institutional strengthening and technical assistance work among a variety of other programs and projects concerned directly and indirectly with climate change, in FSM or more broadly. This has led to a number of important potential and actual partnerships for PACC and related climate adaptation initiatives. This work is of particular significance and relevance with regards to replicating processes to other States because of the abundance of developing programs with climate adaptation-related objectives that are taking place at the same time (e.g.: PPCR work and new UNDP R2R proposals etc.).

The design of the Project Implementation Unit (PIU) in Part 4 demonstrates this link clearly (. Cost effectiveness is to be achieved also through the lessons learnt that Kosrae has experienced during the challenging work packages of getting institutional and legal change initiated within the State. The actions from Kosrae have taken the PACC project furthest towards the concept of forming a framework for climate adaptation programming in the sub-region of Micronesia (Palau, Marshall Islands, Nauru, Kiribati), and provides a good model for the other States to follow. It should be noted that a detailed cost benefit analysis (CBA) was carried out for the PACC pilot project for Tafunsak, and a similar approach is to be adopted for the intervention measures proposed in Output 3.1 and 3.2 to help justify the interventions prior to any site intervention.

There is no incentive to spend large sums of donor money on projects that are unsustainable (i.e.: building new seawalls to protect vulnerable atoll communities or building / upgrading an existing coast road if it is likely to be inundated by tides on an annual basis). In addition, no works will be carried out, even if it complies to the policy set within each SMP, unless the proposed intervention work clearly complies to environmental regulations for each State and that a formal EIA is completed (if requested by the States' environmental regulatory body).

The cost-effectiveness of the project will be reflected at the operational level through the following approaches:

Throughout the project, AF resources will be aligned with the financing and delivery of outputs that have competitive procurement components to ensure best value for money. In this regard, the project will apply best practices in coastal engineering and adaptation identified by other ongoing climate change adaptation projects in the country (Appendix F) and the Pacific region. SPREP procurement procedures will be followed (Section G, RIE budget notes).

This project will utilize existing government structures and processes for implementation. By building on existing government and institutional structures, the project will also harness in-kind support and contributions from offices at the national and State levels (office space, staff time, communications, etc.)

Through the existing network of stakeholders, the results framework of the project will be able to utilize existing baseline surveys of line agencies and harness existing delivery mechanisms if applicable. This will further expand the reach and replicability of outputs.

The bulk of the project funds will be directed to community-level activities and hence brings opportunities for local procurement of goods and services with it.
The encouragement to support atoll communities to consider low cost soft engineering solutions, to help "buy time" for longer term transition to higher land or higher islands in FSM is understandably a sensitive issue, but one that FSM State Governors are currently discussing and planning for the longer term and this is represented as a cost effective measure..

It is important to stress that cheaper and less robust engineering techniques, poor construction quality and poor material use (e.g.: as currently seen used in Kosrae) can lead to premature failure of defences very quickly. Coastal defence structures (soft or hard) that are subsequently abandoned by the users after only a few years of operation are clearly not cost-effective. Indeed, the term "cost-effective" for technologies improving coastal resilience in the context of climate change impacts, means optimum value for money invested over the long term. Coastal defence measure options are meant to be designed for a lifespan of up to 50 years and thus this is an appropriate financial investment horizon to consider in a cost-benefit estimate. The lowest cost of

m^3 or per unit length of defence measure is not always the best metric or the most cost-effective over a climate-relevant planning horizon due to on-going repair or periodic replacement, particularly if construction quality is compromised to save money. In addition, with decaying defences there is some loss of protection function which can be caused by overtopping in specific locations, thus a reduced initial cost may lead to a reduction in coastal resilience.

The proposed investment budget outlined above will also support the acquisition of the best technical expertise to help towards full implementation, with the involvement of proven coastal engineers, coastal planners, drainage experts and supporting community stakeholders that will guide all future sea defence management in FSM. All Government staff involvement in the programme will be an “in-kind” contribution. The cost-effectiveness analysis of these options will be improved as more data become available during project implementation before the building of these technologies.

The proposed project areas were selected based on detailed consultation with National and State level stakeholders. Decisions were then taken based on a rapid assessment of options through a Multi-criteria analysis (MCA) approach mechanism. Decisions were therefore primarily made on the proposed technology options on the basis of financial effectiveness of the investment at that particular site in addition to clear recommendations as set out by the Kosrae Shoreline Management Plan (2014). However, additional factors were considered in order to make the final justification: (i) stakeholder views and perception were taken into account in terms of the local and community desires for the target areas, (ii) additional benefits (financial and social) above coastal protection / damage prevention were also considered such as stabilising and establishing livelihoods and provision of new productive resources.

Thus, cost effectiveness tailored to the local stakeholder situation was used to define the proposed areas, islands and technologies. The specific amount of damages that might be avoided by any one option will be dependent on how and where the proposed intervention measures are actually implemented, as well as the characteristics of any particular storm event that is being designed for. It cannot be assumed at this time, that all options are equally effective in damage avoidance as some options rely on physical processes that are known to be less effective at dispersing wave energy. Some of the less expensive options (e.g., mangrove replanting) would most likely avoid less than 10% of damages, while the more expensive options (e.g. rock revetment work at Pal and Mosral, Kosrae) could potentially avoid more than 25% of damages. Cost effectiveness has thus been viewed through the cost benefit analysis lens, aided by local community views, preferences and expert advice.

D. Describe how the project is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

Building on existing government institutions at the different levels, and working closely with key national institutions, the programme will foster inter-ministerial and cross-sectoral coordination on CCA and coastal management actions, in line with aim of the new Policy on Disaster Risk and Climate Change Adaptation (2013). Cross-sectoral climate change coordination mechanisms will be created and strengthened for climate change resiliency in all islands, with lessons learned in each island applied nation-wide and globally.

The proposal is fully compliant with the newly endorsed Policy on Disaster Risk Management and Climate Change Adaptation (2013). This supersedes the 2009 Climate Change Policy which needed updating to reflect the importance of DRM, as Micronesia is one of the nations' most vulnerable to climate change and sea-level rise. Scientific experts believe that the impacts of climate change have already begun with rising sea levels and more extreme weather events. These impacts have damaged and sometimes destroyed crops, homes, roads and other infrastructure. The FSM Government anticipates that these impacts of climate change will even require the sensitive consideration of having to relocate some Micronesian communities living on outer atoll islands. Further, through consultations during development of the State-wide Assessment and Resource Strategy 2010-2015, all four States identified climate change as posing a threat to coastal communities, especially as a result of sea level rise. However, the vulnerability of outer islands to sea level rise makes this a significant challenge to implement.

FSM approved the Hyogo Framework on 17 March 1998. FSM has, however, ratified the UN Framework Convention on Climate Change (UNFCCC) on 18 November 1993, and has submitted its Initial National Communication (INC) to the UNFCCC on 2 October 1997 and an addendum on 22 February 2000. The country has also initiated efforts to create an institutional set-up that seeks to mainstream climate change issues into the national legal frameworks. The project is fully aligned with FSM Strategic Development Plan, specifically to "protect, conserve, and sustainably manage a full and functional representation of marine, freshwater and terrestrial ecosystems". The FSM Government has also indicated to SPREP an interest in developing a Joint National Action Plan for climate change and disaster risk, using a model that has been developed in the region by SPREP, SPC and other partners (see http://www.sprep.org/Adaptation/current-programmes).

The Kosrae State Government has recently passed a Climate Change Act that seeks to address the issue in a long term manner. With regard to Kosrae, the work proposed in Component 3 is consistent with the States new Strategic Development Plan (2014-2023) and SMP (2014). In particular, Chapter 3 (Development Strategies) includes a specific sub section on the "Environment". Result 1 of that sub-section is that the "impact of coastal erosion is minimised". The objectively verifiable indicator (OVI) for that result is that *"By 2023, coastal erosion is adequately addressed, through promotion of community resilient and relocation strategies and with enhanced awareness of underlying issues and causes of increasing hazards*". A series of costed activities are

presented, one of which states that *"climate proof measures integrated in the Coastal Management Plan are implemented"*. Is it understood that this is meant to refer to the Shoreline Management Plan for Kosrae. Component 3 addresses this issue specifically for Kosrae. The model adopted by Kosrae is being proposed throughout this proposal as the potential model for the remaining 3 States (reflected in the outputs assigned within Components 1 and 2).

E. Describe how the project / programme meet relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and comply with the Environmental and Social Policy of the Adaptation Fund.

The project reflects the strategic goals of the 2004 National Strategic Development Plan (SDP) with regards to the Environment namely to *"develop and implement integrated coastal environmental and resource management plans to enhance resilience of coastal and other ecosystems to extreme hazards exacerbated by climate variability and sea level rise"*. With the exception of Kosrae, other States have not yet adopted coastal resource management plans to assure coordination and successful resource management. The SDP states the requirement for *"coastal management plans developed for four state centres by 2008"*. This has not been achieved as yet, though this project shall help to deliver its expected output. In addition, the NSD Plan states the request to *"Integrate considerations of climate change and sea-level rise in strategic and operational (e.g. land use) planning for future development, including that related to structures, infrastructure, and critical assets supporting social and other services"*. The main focus of the project is to build resilience into national and State wide planning and development through "climate proofing" existing investment/infrastructures as stated in the SDP. The AF funds will be sought to implement the CC proofing investment required and its added cost.

National technical or engineering build standards for the coast are not established for FSM. However, the national commitment to climate change adaptation is declared through the supporting work of PACC on Kosrae which is planned to be up-scaled for the other 3 States in Component 2. Introducing a series of new building technical standards for FSM, coupled with a Coastal Development Guidance Manual and Environmental Policy Guidelines (EPG) is identified as a core activity in Component 1 (plus the recommendation for State specific Shoreline Management Plans to be produced for each State).

In order to address the above, each State shall take forward and be encouraged to replicate the procedures and standards set by Kosrae in terms of setting new climate resilient EIA regulations. This shall help to deliver (at a national level) the expectation to deliver and implement long-term plans for dealing with the impacts of climate change, including the development of integrated environmental and resource management objectives that enhance resilience of coastal and other ecosystems to natural hazards; identification of structures, infrastructure, and ecosystems at risk and explore opportunities to protect critical assets; "climate proofing". Outputs shall include existing

facilities and infrastructure "climate-proofing" assessments and improvement plans developed for all States. There may be additional refinements required for each State however.

Through lessons learned from the PACC Kosrae initiative, this proposal shall be able to build on the leadership already demonstrated through the facilitation of new policy: following an intense 2-year process the Kosrae State Code was amended with ratification of the Kosrae Climate Change Act 2011, under which all new infrastructure developments, especially roads and buildings, are required by law to take climate change into consideration, in design and construction. Through the recently updated and “climate proofed” Shoreline Management Plan (2013), Kosrae intends to use this proposal to apply and implement the new State legislation in Kosrae; and also to use the Kosrae legislation as a “model” for the other three FSM States, and also more widely in the region. Also under the 2011 Act, Kosrae State, guided by the PACC project, has opted to regulate climate change adaptation by means of modifying their Environmental Impact Assessment (EIA) system. EIA experts from SPREP conducted workshops in FSM, in 2011 and 2012, for the SLM and PACC projects; with the objective of designing the EIA regulations.

The Kosrae State EIA process (also refer to Annex L) and approach shall be reviewed for relevance to other States (Output 1.1) and if appropriate, adhered to for the remaining 3 States. Updated EIA regulations shall then be used by all 4 States prior to any coastal intervention identified in Component 2 or 3 should this be requested by the appropriate environment regulatory body). Specific EIAs for each proposed intervention shall be undertaken in year 1 of the programme prior to the commencement of any engineering works (identified in Component 3). The EIA shall ensure compliance to the two new guidance standards for roads and coastal development measures (see Appendixes C and D) and a clear report identifying the implications of different climate change scenarios for specific development purposes shall be included. It is therefore confirmed that, if requested by each States Environmental Department, then a full (or a preliminary) EIA shall be carried out. Should an EIA be required (based on revised FSM screening procedures to be put forward during Component 1 and the creation of the new Environmental Policy Guidelines being created), then these shall be undertaken prior to the commencement of Component 2 works (for Yap, Chuuk and Pohnpei) or the start of Component 3 (for Kosrae).

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Each EIA shall clearly provide the assurances (through clear mitigation strategies and the establishment of an enforceable Environmental Management Plan for each intervention project).The any potential negative impacts of the proposed infrastructure works have been adequately considered. Only upon receipt of a formal environmental permit (from KIRMA for Kosrae or equivalent from other States) will any pilot or formal intervention be carried out (as identified in Components 2 and 3).

The design and implementation of specific activities will pay particular attention to identifying and minimizing the gender-differentiated consequences of climate change, including those related to extreme events and disasters. Internationally recognized

principles of gender equity will be applied, through use of gender analysis tools during design stage of the project and individual activities.

Nationally developed and applied tools and guidelines for assessments of coastal vulnerability and adaptation, will be used and refined during the course of the programme. Lessons learned and success factors will be documented for use during project evaluation, and subsequently in other projects. Participatory community-based consultation processes will ensure that specific interventions are accepted and owned by communities and clearly understood outputs or targets are established. All programme activities will be subjected to a SPREP appraisal process, which will ensure compliance with national standards and will be further confirmed or revised during project inception.

F. Describe if there is duplication of project / programme with other funding sources, if any.

Appendix F lists a number of on-going climate change adaptation activities that FSM is a partner and main beneficiary. These range from regional programmes such as the UNDP-GEF and Government of Australia funded PACC project that officially closed June 2015; sub regional programmes such as the Micronesian Challenge that started in 2006 and is continuing possible thanks to various number of donors (NOAA, Nature Conservancy, etc). The Micronesia Conservation Trust program which started in 2002 is an ongoing program that aims 'to support biodiversity conservation and related sustainable development for the people of Micronesia by providing long term sustained funding'. The EU-GCCA which will be completing in December 2015 as well as June 2016 in other states is another FSM program that is funding from a different source (European Union). There are also bilateral projects that are within each and various programs.

While it is difficult to identify if any of the projects duplicate, what is clear is that a lot of these projects are complementing each and other and are synergizing. For example the PACC project from Kosrae, with its lessons learned are being upscaled by this project, without the need to start from a zero baseline for adaptation work coastal shoreline management plans. Learning by doing and knowledge management is a crucial component of the proposed programme that provides the platform to work closely with other programmes. In a follow up meeting with the GCCA counterpart in June 2015 consultations, it was clear that a number of the project activities could not be completed due to lack of funding due to time limitations of those projects. Often these activities do not continue due to lack of fundings and lack of synergy. One example is the Ulithi atoll conservation reef ecology survey program. The program could not be extended to nearby atolls that include the two selected islands of Yap. The proponents of that project will be looking forward to new incoming programs that can synergize with the work already underway. This project would identify these partners and ensure that there is no duplication but more synergy programs.

The CBA program of PPCR continues into late 2015. This project would continue to work with the CBA program and identify opportunities to include CBA as a potential tool for ground truthing community selected priorities.

The Nationwide Climate Change Policy (2009) (now superseded with the latest FSM 2013 Climate and Disaster Management Policy) sets out both mitigation and adaptation strategies. It commits to address adaptation needs through a framework in which *"all development activities in FSM take into account projected climatic changes in the design and implementation as stipulated in the FSM Strategic Development Plan/Infrastructure Development Plan."* It advocates use of an ecosystem-based approach where applicable; strengthening the application of traditional knowledge in conservation practices; and the development and implementation of appropriate strategies to improve food production. It also calls for the integration of climate change into other policies and strategies, including those related to disaster preparedness. Likewise, the State-wide Assessment and Resource Strategy 2010-2015 promotes food security through agroforestry, and coastal stabilisation as specific responses to climate change. It requires strategies be developed to address sea level rise in the outer islets.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The project proposes a dedicated component aimed at improving knowledge management and develop capacity at all levels of development intervention (individual, village, municipal, state and national). The aim of the component is to provide a systematic approach at the country level, to improving understanding on climate change impacts on coastal zones. In doing so, the goal here is to enhance and activate participation of key stakeholders to address the risks and challenges of climate change in the coastal sector in a holistic manner.

The knowledge management component strengthens other components of the project by providing an overarching knowledge management plan. The project aims to identify and capture all knowledge management needs of the stakeholders into an overarching knowledge management plan. The plan guides the target beneficiaries on the work that is to be undertaken to be able to effectively develop, deliver and monitor the project activities outlined in each of the first three components.

One of the key deliverables of the project is knowledge management products that are tailored to the national, state and specific coastal and island community contexts. This project would focus on developing materials and information that requires capturing, review and share lessons learned and best practices applies. The products that are translated into both English and the local dialect and native language which consider the cultural diversity of the target islands of the project will include science, traditional knowledge and educational materials such as brochures, booklets, technical reports that capture data and information that inform policy and management plans at the island and community levels. The lessons from the development of knowledge management

products of other projects will be considered. For example the PACC Technical and Experience Series developed to capture the adaptation demonstration process of various adaptation projects, in the very key areas that this project is focusing on least of which is coastal zone management.

The development of materials aimed at guiding trainings and capturing information will be developed to serve the immediate needs of the project but aim to continue ongoing training beyond the life of the project. This addresses the sustainability of the results of the project as these key knowledge management products are designed to be absorbed into programming materials of the various government and agencies that are charged under law to carry these capacity initiatives for all concerned parties. For example, the technical module trainings on gender mainstreaming into climate change. The department of social affairs will be working closely with EPA / KIRMA to carry out refresher trainings on gender perspective in coastal management and coastal monitoring. This comes as a result of existing technical training guides and modules that the project would develop.

The training component of the knowledge management component entails initially the development of technical modules, tools and training materials. This is required to build the capacity of the stakeholders to be able to carry out the identified activities of their respective states.

A key feature of the knowledge management of this project that sets it apart from other climate change adaptation project is the investment into developing key performance criteria and indicators (KPIs) for staff and departments and its processes. For example developing behavioural and environmental ethic aspects into job appraisals will be developed, to effect paradigm shifts in how individuals, agencies carry out their work, that contribute to, relate to, adaptation to climate change.

The local and national level workshops, learning and trainings will be aimed at delivering the knowledge management plan and carry out the training modules developed by the project. The lessons and learning workshops will be documented by project staff. These will be disseminated through a number of appropriate means to various target audiences and be guided by a project communication strategy. For example: 1) Radio and TV programmes, leaflets and posters will target the public with special attention to audio-visual presentations in DVDs using English and local languages; 2) training modules generated from activity case studies and demonstrations will be used well after the first phase of the programme ends; the target groups will be primary and secondary school children and students undertaking tertiary studies; 3) guidelines and manuals for vulnerability, adaptation and coastal risk reduction assessments, land use planning and other programme-related activities will be made available to field workers, communities and other relevant parties.

The project will strengthen existing agency website already established with links targeting development professionals, teachers and school children in the outer island communities.

State and national level workshops will be held to facilitate peer-to-peer exchange of knowledge. Web-based platforms such as Pacific Environment Information Network, the Micronesian Challenge Trust, the Pacific Climate Change Portal; the Adaptation Learning Mechanism will be used to share information and also promote programme findings within the country. The capturing and analysing of experience, success factors, good practice and lessons learnt will be systematically applied throughout the programme cycle, for example from the detailed vulnerability assessment through the adaptation planning and implementation that will underpin the design of the project as articulated in the final project proposal.

An exchange visit amongst islanders within the island communities will be part of the learning program of the project. It will encourage members of other outer island communities in all 4 FSM States to (where travel arrangement permit) visit the programmes work sites and observe the technologies used. For example, this will be part of the extension services work in the country and will stimulate learning and sharing of practices. Towards the end of the first phase of the programme a national workshop will be convened to review the new knowledge and technologies used, mainstreaming and coordination practices implemented and to develop a strategy for on-going replication and improvement for continuing use in similar future projects in FSM as well as elsewhere in the Pacific and beyond.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

Three sets of stakeholder consultations were carried out during December 2013 (Appendix A), 2014 and recently in June to July 2015. The important consultations were the latter and were to systemically identify and subsequently confirm the priorities that project will undertake. The consultations involved prioritization and ranking of community and island needs exercises that identified, assessed and confirmed priorities of the project.

Stakeholders consulted

The stakeholders identified and consulted include the following:

State	Community Level	Government, NGOs, IGOs
Yap State	• Council of Pilung (Yap Proper) chief leaders • Council of Tamol (Outer islands) chief leaders	• Office of Internal Affairs • Yap Fishing Authority • Office of Planning & Budget • Yap Environment Protection Agency (EPA)

		• Yap International Organization for Migration (IOM) • YapCAP • Department of Agriculture & Forestry • Yap Department of Resources & Development (R&D)
Chuuk State	• Weno resident representatives of Satawan and Lukunor atoll islands	• Chuuk CS • Chuuk Women's Council • Department of Agriculture • Chuuk EPA • Office of Development and Aid • Chuuk R&D • Chuuk IOM • College of Micronesia-FSM/ College Extension Services (COM-FSM/CES) • College of Micronesia-FSM/ College Research Extension (COM-FSM/CRE)
Pohnpei State	• Chief leaders Nukuoro • Women leaders Kapingamarangi • Chief leader Pingelap atoll • Church minister	• COM-FSM/CES • COM-FSM/CRE • Department of Lands and Natural Resources • Department of Transport and Infrastructure • CUYA • FSM Youth and Social Affairs • Department of Agriculture and Forestry • Conservation Society of Pohnpei (CSP) • Office of Emergency and Environment Management

		(OEEM) • Pingelap atoll conservation
Kosrae State	• Farmers (also in senior citizen) • Landowners (also senior citizen) • Fisherman (also senior citizen) • Youth • Women and Housewives • Persons with disabilities • Council Chairman (senior citizen) • Mayor • Bankers • Food Inspectors	• Kosrae Island Resource Management Authority • DREA • Kosrae Land Court • Kosrae Governor's Office (Lieutenant Governor) • KSL – Senator • Department of Transport & Infrastructure • Department of Agriculture and Forestry • Department of Health Services • Department of Environment • Kosrae Utilities Authority • UMG • Micronesian Challenge Trust – Kosrae Office • Kosrae Conservation Society Organization • TMG • Office of Development Aid

The vulnerable group representatives from the communities that attended the consultations range from landowners, shore owners, farmers, housewives, youth representatives, senior citizens, village food inspectors, landowners, teachers, municipal government representatives (council members, council chairman). The government agencies assisted with facilitation of the consultations and included the department of agriculture, fisheries, environment, island resources management authority, resources and economic affairs, land court, health services, state legislature, transport and infrastructure) and the business community.

Stakeholder Consultations for the Preparation of Proposal

Process of Consultations

The process at which the consultation was carried out was by segregation into gender-based focus group discussions. The focus groups were therefore divided in line with the traditional village community group set ups of men, youth, women and senior citizens. Where youth were few in numbers and only male, they joined the men's group. This was the same for the young women who naturally joined the women's group

The focus group discussions for Yap, Chuuk and Pohnpei were carried out in a similar format. Each of the groups was asked to go through each and all charts and answer the guiding questions provided starting with any chart. Groups were encouraged to discuss within their group and provide their responses on the charts and post-it materials provided. During plenary discussions, the meeting will go through each chart and discuss responses openly and seek agreement and clarification of responses provided. Agreements and disagreements were noted and recorded. The differing points were maintained that addressed particular concerns of that group. For example, where women opt for sanitation activities to be made explicit under water security measures, these were maintained as it pertained to women's needs, vulnerabilities and opportunities where they excel. The consultations were provided with the following charts and guiding questions for Yap, Chuuk and Pohnpei consultations.

Table 6 Consultation Charts for Focus Group Discussions - Yap, Chuuk and Pohnpei State only.

CHARTS PROVIDED	CHART QUESTIONS	QUESTION OBJECTIVITY / INDICATORS
CHART X: Community Priorities	• In 2014, initial consultations identified priority sectors for the 2 islands. They are: **food security, water, and marine resource management** 1. Do you agree with these priorities? Y/n 2. What reasons your group selected y or n? 3. What are **other** priorities that are equally important? 4. What can we do to include these others?	• Gauge if priorities changed in view of recent events (typhoon Maysak March 2015, elections, tidal surges Feb-July 2015, etc.) • Reconfirm priorities from communities • Seek alternatives outside of existing priorities • Guidance from communities on actions, activities of the project
CHART Y: Ranking the Priorities	• Rank the project's priorities, the group's identified priorities and alternatives to priorities in view of most urgent and needed to least urgent and important	• Priorities are ranked by communities themselves in terms of importance, urgency • Gauge if pre-consultation priorities remain high priority for the project to pursue • Degree of sustainability of project measures • Degree of ownership of priorities and activities of the project

CHARTS PROVIDED	CHART QUESTIONS	QUESTION OBJECTIVITY / INDICATORS
CHART Z: Practical things to do	• Presented the 3 key outputs of the project - per output 2.1, 2.2, 2.3 • What are three (3) examples that your group can do under each of the 3 outputs? • What are three (3) examples that your group need under each of the 3 outputs?	• Community ownership of outputs • Community understanding of the project outputs • Seek guidance and range of activities from communities to achieve the outputs • Gauge capacity to carry out activities (do), and ability to identify what activities that are needed.
CHART A: Planning and Doing	• Kosrae state – has a **state shoreline management plan** recently endorsed in 2014. • It helps the state secure support to protect their coast and shoreline from climate change impacts • This project plans to do a shoreline management plan for each state. • Questions: • Does [the state] need a similar plan? Y/n • Do you know if [state / community / island] has a plan? Y/n • Should our islands have specific coastal management plans?	• Gauge community awareness of coast management plans at any level (local, state, national) • Probe the need of a state coastal management plan in the State • Evidence that communities disagree or agree with the need for a shoreline management plan as outlined by the project proposal

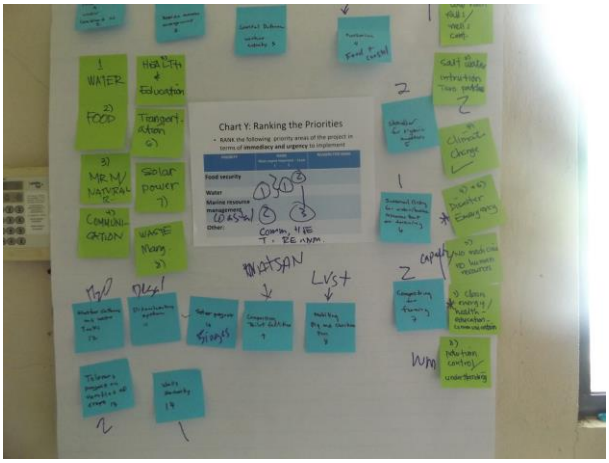
H.1 Consultative Meeting 1: Pohnpei

On 22 June 2015, OEEM, Pohnpei Environment Protection Agency (EPA) and SPREP organized a meeting in Pohnpei with island community representatives, church ministers, NGOs, and government agency representatives. The participants discussed the risks and vulnerabilities, priorities and alternative options for the outer islands. The meeting concluded that water security, food security and marine resources management in that order are top priorities for the selected islands (Table 7). The women in the women and senior group identified water and sanitation needs as important for women's needs in these islands, and that radio as the most effective means to communicate changes in outer islands. All conveners agreed to the need for a coastal management plan similar to that of the 2014 Kosrae Shoreline Management

Plan as well as the required legal and regulatory instruments that may be required to endorse the implementation of the plan.

Table 7 Pohnpei State – Combined results for Chart X and Y: Community priorities

Ranking	*Group 1: Women & Senior Group*	*Group 2: Men's Group*
1	Water security with a focus on sanitation	Water & Food Security combined
2	Food Security	Marine resource management
3	Marine resource management	Coastal defences
4	Communications to outer islands	Nursery & shredder for organic matters for soil rejuvenation
5	Health & Education	Seasonal closing program for water marine resources in decline



H.2 Consultative Meeting 2: Chuuk

On 24 June 2015, OEEM, Chuuk EPA and SPREP organized a meeting in Chuuk with government managers and directors, women council president, island agriculture extension officers, foresters, farmers, senator, funding coordinators, program managers, researchers, specialists, and administration assistants and NGOs. The consultation meeting was divided into men, women and senior groups, combined discussions perused on coastal erosion as a serious case of vulnerability on island shores. Asking whether or not a coastal plan is required, all men and women groups provided similar responses and agreed that Chuuk State will benefit from a Shoreline Policy, requiring a shoreline management plan similar to the Kosrae plan. There is a land use plan and a

disaster risk management plan, but that it no way addresses the climate risks for Chuuk. All men and women's groups, regardless of their area of expertise, ranked water security as highest priority, relative to food security and marine resources management and other important sectors such as transportation (Table 8). The women emphasised the need to focus on infrastructure (roof gutters, down piping, water tanks), water treatment and maintenance, including protection of natural water sources (e.g., wells). Illegal fishing practices and pollution and lack of traditional conservation practices of the coastline are reasons for prioritising marine resources management. Participants agreed with the men's group that there is an urgent need to trial agriculture practices that promote the growth of taro, breadfruit, pandanus and coconuts in the outer islands. The lessons drawn from other successful agriculture programs in Chuuk were also discussed to be considered.

Table 8 CHUUK State: Combined results for Charts X and Y - Community Priorities

Rank	Group 1: Women	Group 2: Seniors	Group 3: Men
1	Water Security - infrastructure, treatment and maintenance (incl. natural sources)	Water Security	Water Security
2	Food Security -	Food Security with focus on sustainable food crops	Food Security - focus on taro, breadfruit, pandanus, coconuts and balanced nutrition programs
3	Marine resource management - with focus on fishing practices, and minimize pollution	Coastal Management - conservation and protection of resources	Marine Resource Management
4			Other - Transportation

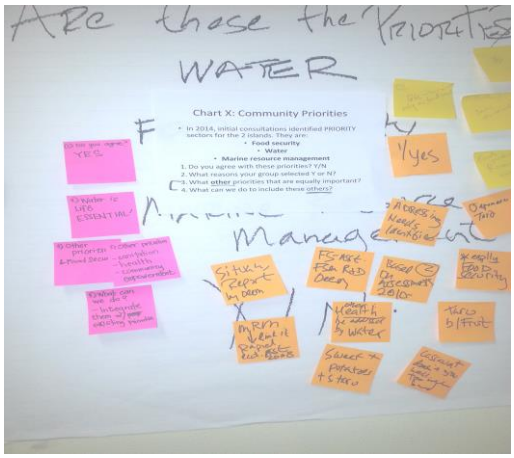


Figure 11 Identifying community priorities. Group posts in response to the questions of Chart X. (Pink posts - Women; Orange - Men, Yellow - Senior Citizens. (photo: Simpson, 24 June 2015)

Figure 12 Women's group discussing their priorities identified (photo: Simpson, 24 June 2015)

H.3 Consultative Meeting 3: Yap communities

On 30 June 2015, OEEM, Yap EPA, Yap Office of Planning & Budget (OPB), Yap Resources and Development (R&D), and SPREP organized a meeting in Yap with community leaders from all islands of the State. The main island chiefs representing the traditional council of Pilung (COP), and the outer island chiefs that make up the traditional council of Tamol (COT). Also present were government departments and NGOs that carry out work in the outer islands.

The participants discussed and agreed that the priorities identified in the initial consultations are seriously supported as those that must be implemented by this project. The chiefs raised their concern particularly with food security pointing to the need to invest in conservation and protection of their food sources (marine environment) and land (planting food crops), and pulling together of traditional knowledge and science to help identify and advance management of the resources.

The conveners discussed at length management plans as land ownership issues will increase and become more complex. Shoreline management plans as what the State of Kosrae developed is urgently needed and must be added to the government's priority list of plans to develop. The management plans, however, will need to be island-specific inclusive as the needs for each islands are unique ecologically, socially and economically. The women's group stressed that the plan should be developed for the state with an overall framework for Main Island and neighbouring islands. There is also a need to establish respective atoll committees to contribute to developing the island specific issues and priorities for implementation.

The conveners in sum agreed that food security, water management, and marine resources management will need to be enhanced by this project for climate-resilient atoll communities. They stressed that it must build on ongoing programs that are carried out by government already (see Appendix F). This is in partnership with organizations

and institutions, such as the International Organization for Migration (IOM) and One People One Reef. IOM works with Yap State to implement hazard, vulnerability and capacity mapping with several outer island communities. Marine scientists and agriculture researchers from One People One Reef are working with outer island communities in collecting ecological and produce data that inform and improve resource planning and management. Accordingly, the participants felt these are quantitative and qualitative baseline information that this project will need to build its activities on and achieve its outcomes.

H.4 Consultative Meeting 4: Kosrae Government

On 6 July 2015, OEEM, Kosrae Island Resource Management Authority, and SPREP called for a meeting with the Lieutenant Governor of the State of Kosrae, Mr. Carson K Sigrah and key government stakeholders including NGOs and sub-region organization representatives. The Lt. Governor emphasized the need to consider the severe impacts of climate on the planned infrastructure works of Kosrae that is already being felt both in terms of impact on investments already made on the roads of Kosrae and the resource support to continue to maintain them.

The conveners discussed the shoreline management plan and the developments listed in the infrastructure list of the Infrastructure Policy Implementation Committee (IPIC) and that requires immediate attention and urgency. The participants concurred about the need to consider the Malem to Utwe inland road a key activity of the IPIC infrastructure list. It is important in that it secures high-risk infrastructure in government plans for continued maintenance. Members of the IPIC responded that the 'Malem Inner Road' is listed in the June 2015 IPIC Master List that is summarised in equation 1and 2 charts below. The investment by this project is guaranteed to be maintained as a result.

On the 28 July 2015, following its July 2015 monthly IPIC meeting, the Government of Kosrae released its official Master Infrastructure Policy Implementation Listing, denoting a SO rating[18] of 8.9 for the ‘Inland Road Development - Phase 1 Malem to Yeseng to Utwe’. This translates to a high priority for any project support and development for this particular section of the government road infrastructure assets. The Malem-Utwe road section is now a high priority for the government to mobilize support and secure resources for this development. As such, places this project and other projects pertaining to the road section, in high commitment from the government of Kosrae. It is important to note one of the criterions of the IPIC listing is ‘natural disaster and climate change resilience’ (refer also to Equation 2 chart below).

[18] SO rating used by the IPIC Priority List averages nine criteria’s that ensure the road development is high priority for the Government. (1.0 is little or no contribution to 5.0 very high contributions). The nine criterion are: Investment and economic growth, Private sector capacity and/or employment, Living conditions and/or income generation, Access to/delivery of public health services, Access to/delivery of education, Environmental outcomes/ conditions; Natural disaster/ climate change resilience; Capacity of government infrastructure agencies, Financial sustainability of infrastructure (Kosrae Government, 2015)

Figure 13 Lt. Governor Carson addresses the government stakeholder's meeting on the AF proposal 6 July 2015 (source: Simpson Abraham)

Figure 14 Government stakeholder participation meeting for Kosrae State, 6 July 2015, Government Administrative building (source: Simpson Abraham)

H.5 Consultative Meeting 5: Kosrae Malem community

On 6 July 2015, a community consultation with the municipal community of Malem on the island of Kosrae brought together senior citizens, women, and men's groups. Individual members of the youth participated and joined both the women and men's groups throughout the consultation.

The set of questions for the Kosrae community differed from those carried out for Yap, Chuuk and Pohnpei consultations. The questions targeted the community's agreement, evidence of support against those investments 3.1 and 3.2 of the project proposal (Table 9)

Table 9 Consultation Charts for Focus Group Discussions – Kosrae Malem community

CHARTS PROVIDED	CHART QUESTIONS	QUESTION OBJECTIVITY / INDICATORS
CHART X: Community Priorities	In 2014, initial consultations of this project identified the priorities for KOSRAE is the (A) New road section construction from Malem to Yeseng - plus access routes to the 2 villages (B) Pal and Mosral rock revetment (wall, alongside coastline road)	

CHARTS PROVIDED	CHART QUESTIONS	QUESTION OBJECTIVITY / INDICATORS
CHART X: Community Priorities…	1. Do you agree with these priorities? 2. Post up reasons to support your answers. 3. What other alternatives that this project could focus on? *one post = one alternative* *RANKING* *4. Please RANK YOUR ALTERNATIVES & THE 2 PRIORITIES by placing them in the H – High, M – Medium, L – Low - area of the chart*	• Gauge views of communities against pre-agreed priorities • Identify supporting reasons for agreement to priorities • Identify if other priorities and alternatives and whether these options be prioritized
CHART Y: Extreme Events	From your experiences and memory, please post up • WHAT is the extreme event? (king tides, typhoon, drought, surges, landslides, tsunami) • WHEN did it happen? (month, year please) • WHAT happened? (house flooded, no water) • WHAT did you do? (moved, rebuild, buy water)	• Gauge the level of experiences on aspects of vulnerability (degree of exposure, sensitivity and adaptive capacity) • Understand the level of vulnerability from a community perspective • Identify community-level coping strategies that can be enhanced, scaled up or replicated
CHART Z: Cut-Off Roads	SCENARIO1: The road section at Mosral and Pal has been completely cut off by Typhoon Simpson. There are no inland roads. • What would you do? • What would happen to your normal day routine? Or to your business? • What should/would you do now to prepare for these kinds of challenges? •	• Gauge the level of ownership of communities to the project, activities • Understand community perceptions on options of community responsibilities that may assist in addressing sustainability needs of the project and of the community • Gauge the level of willingness to own and sustain the investments in Output 3 of the project

CHARTS PROVIDED	CHART QUESTIONS	QUESTION OBJECTIVITY / INDICATORS
Exercise 2: Partnership Mapping	On a flipchart, write the name of your community in the middle. Circle it Write names of the projects, programs, groups, government, NGOs that your community is involved in. Circle that one. Link the 2 circles with a line. Explain ON THE LINE what services, information the village provides TO that program, etc. Explain further ON THE LINE what services, benefits the community receives FROM that program.	• Gauge level of awareness of partners and their work that influence the community; • Gauge partnership services perception • Identify and understand the level of ownership, commitment and support of the community of the project

Chart Y: Each group provided responses and shared experiences of cases of vulnerability to extreme events in recent memory. All groups recall similar climate extreme events during their lifetime. These include for example the droughts of 1983, 1996-97 that saw forest and wild fires spreading, farms and nearby homes affected. The whole island experienced the shortage of water and government had to transport water to all municipal communities. King tides in 2008-09, 2014, and 2015 brought flooding in coastal and upland areas where good hard soil remained inundated (oversaturated) and developed wetness features that led to drainage blocks. The communities responded autonomously, through changes in farming, for example giving up farming of taros but relying more on bananas and breadfruit, relocated and grew *misac* and *musalah* plants. Communities also resorted to reliance on other new crops but more heavy reliance on imported rice.

Chart Z: The responses from each group to a future scenario for Malem where the coastal road sections Mosral and Pal are severely eroded and cut off due to impacts of sea level rise (excess wave overtopping, sea surges, king tides) - were highly relevant to the development of activities of this project (Figure 19). The results of the chart exercise found that groups acknowledged serious interruption to life and livelihoods if no action is done to address the immediate risks with road sections Mosral and Pal. The routine activities include access to business, market, farmlands, hospitals, school, government, sea and airports, and access to water and food supplies as posted on charts shown in Figure 19. The women addressed public health concerns by stating 'zumba' and playgrounds will be closed down and will need relocation. The discussions went as far as indirect results in the long-term, such as the inability to curb non-communicable diseases such as gout, high blood pressure and obesity.

When seeking immediate means to respond against these scenarios, the women's group saw the need for calling all municipal women group meeting and come up with decisions to address the problem. Some of the reactive responses included seeking immediate assistance from government, checking municipal government emergency plans, and finding alternative routes of transportation.

Figure 15 Stakeholder mapping chart developed by the men's group. The women's group later added in their stakeholders – shown in Figure 16. (picture: Carlos. C., 6 July 2015, Malem Community Consultation, Kosrae State)

Figure 16 Members of the women's group working on their rendition of the stakeholder mapping exercise. (Malem community consultations, Kosrae State, 6 July 2015)

Figure 17 Men's group presentation of their stakeholder map – Government and Community consultations, Pohnpei State. (Picture: Carlos. C., 23 June 2015)

Figure 18 Senior citizen's group presentation on the stakeholder mapping exercise by the group – Government and Community consultations, Pohnpei State. (Picture: Carlos. C., 23 June 2015)

Figure 19 Senior Citizens group. Malem Community consultation, Malem Municipal Government Community Hall. (source: Carlos. C., 6 July 2015)

Figure 20 Women's group during their group discussions. Men and youth group on the LHS, with some interested observers in the women's group discussions. (Source: Carlos, C., 6 July 2015)

Figure 21 Men's Group. During consultation discussions on actions they believe should be priorities that the project should address. (Source: Carlos, C., July 2015)

Figure 22 Men's Group. Members of the youth participated in this group and contributed to the discussions through the men's group. The men welcomed the inputs from the youth. (Source: Carlos. C., 6 July 2015)

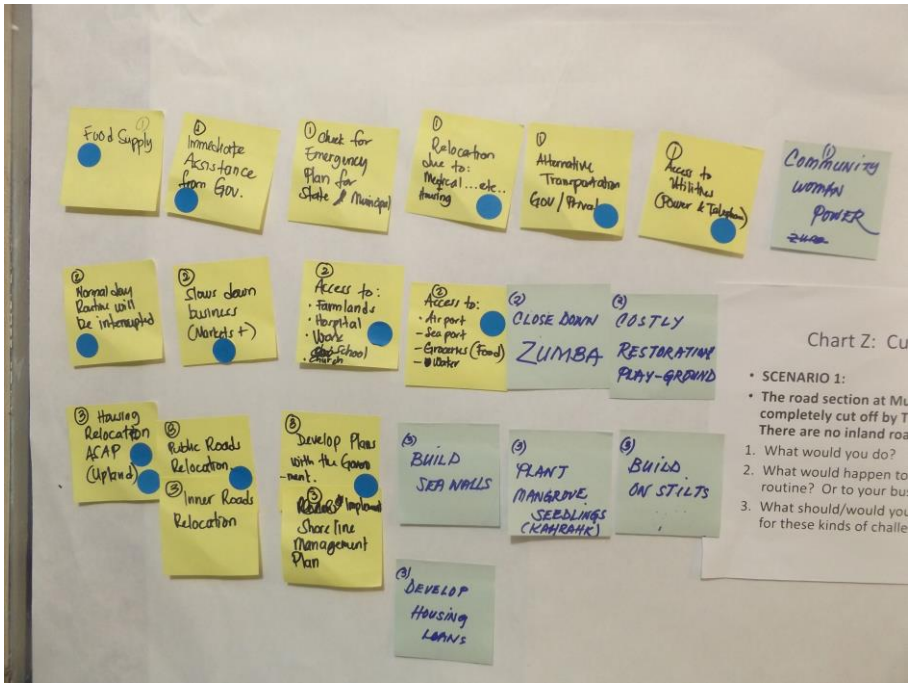


Figure 23 Results of community group responses to future scenarios where road sections at Mosral and Pal have been cut off. The chart exercise was to seek natural habit and behavioral responses and opinions of various vulnerable groups of Malem community if no action was taken to address the highly exposed and high risk sections of the Malem coastal road identified. These include Mosral and Pal identified as highly sensitive shore line areas of the coastal road identified by the KSMP 2014. The blue circle stickers denote agreement to those points in the yellow posts. The blue circle stickers belong to the women's group (photo: Carlos. C., 6 July 2015)

Chart X: The results of the identification of alternatives and ranking of these against existing priorities of this project showed that all groups agree and support the two investment priority adaptation actions of the proposal (Table 10).

Table 10 Chart X: Rankings of priorities identified by community - Kosrae State, Malem Community

Rank	Group 1: Seniors	Group 2: Women	Group 3: Men & Youth
High (1)	1 - Option (A) new road section Malem to Yeseng	1 - Option (A) new road section Malem to Yeseng	1- (A) new road section Malem to Yeseng
	2 - Option (B) Pal and Mosral rock revetment	2 - Option (B) Pal and Mosral rock revetment	2- (B) Pal and Mosral rock revetment
	3 - Relocation strategies	3 Typhoon Shelters	3 - 0% interest housing program
	4- Agriculture Drainage	4 Malem Women Centre	4 - Improve existing / establish new drainage

Med (2)	5 Rehabilitation of Mangrove forest at Pal road section 6 Relocation of schools and public places, etc.
Low (3)	7 Disaster Centre 8 Build dispensaries - e.g., Health Centres

The men's group proposed the investment in priority (B) will need to integrate the rehabilitation of the mangrove forest area of the Pal area. This was in line with the activity to improve existing drainage and establish new drainage including agriculture drainages for low-lying farmland areas that were discussed. The women's group agreed with the proposed changes but also identified typhoon shelters and a Malem Women's Centre as high priorities that must be addressed. The men's group agreed for such a disaster centre including health dispensaries are essential for the communities but in the low priority list under this project.

Relocation Strategy: The men's group were joined in by a number of youth representatives of the community as they came in late. An ensuing education from the youth and men were the issue of concessional housing loan programs. The objective is to assist members of the communities including businesses to relocate further inland. Points raised from the senior citizen's group on this important activity was that it needs to be included as part of the relocation strategies that this project will have to, in the least, formulate and try and address where possible. The relocation of government properties, assets such as schools and other public infrastructure were also suggested to be considered in these strategies. A member of the business community proposed that the idea of considering relocation strategies is an important one that must be discussed further within the project in partnership with other projects, programs as it will also benefit the business communities and not just the village communities.

The results of the discussions informed the activities and more urgent priorities of the project as outlined in Table 10. The willingness to address these concerns was very much alive from the discussions. It addressed the degree at which communities were willing to take to sustain priority investments identified by the project. The women's group for example, responded that they will take it upon themselves to form a committee to raise the issue with government to make sure that these investments continue to be supported by the government.

While there were no immediate and ambitious plans suggested by members of the committee on how they will be able to maintain the roads, they understood that their community – through the office of the mayor – will seriously communicate these community needs to the state and national government. They showed understanding that at the end of the day, it is the Kosrae government that is obliged to support the people in responding to their needs – the maintenance of the roads is of no exception.

Appendix A provides clear evidence, however, of the communities 'full support and endorsement' of the project proposal and its priorities outlined. The letter from the Office of the Mayor of Malem Municipal Government, dated 06 July 2015, signed by the Mayor Grant Jonas and Likiaksa Elesha, Council Chairman was an immediate response to questions raised by OEEM and SPREP during community consultations. It acknowledges the measures of the KSMP 2014, their 'whole lives' experience with vulnerability to climate extremes, damaging 'homes and properties', and their identified 'priority to relocate their settlements and infrastructure…' following the upgraded road from Malem to Yeseng. The letter goes further in pointing out the 'individual perspectives' of women and persons living with disabilities, youth and all vulnerable groups. It concludes with a recognition, full support and enthusiasm of the participants of the issues and plans of the project. As such, this letter, supported by signed participants including landowners signatures concur and endorse the priorities of the project, its investment, sustaining results of the investment, and results of consultations as outlined in Table 6.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

The funding requested is justified by four key needs that are themselves assessed and found to be required by FSM to meet its objective of enhancing the resilience of its most vulnerable communities to climate change. These have be designed into the four components, largely influenced by results of the consultations undertaken with the communities as outlined in Section II.H of this proposal.

Component 1 – strengthening institutional capacity for coastal zone management

Baseline Scenario

The 2009 national climate change policy was recently updated and reframed as the 2013 Policy for Climate Change Adaptation and Disaster Risk Management for FSM. While this exists at the national level, only one state – Kosrae - has strengthened its state legal and regulatory policies. This was possible under the PACC project and it became successful as it is now guiding and regulating the development of the airport bridge currently being constructed and funded by the Government of China.

Yap, Chuuk and Pohnpei currently do not have state-level policy frameworks, let alone legal and regulatory instruments that have climate risks incorporated, enforced or monitored. As a result, development in these three states, in particular construction and infrastructure related, 95% of which are along the coastal and urban areas are carried out through a business-as-usual approach development.

The current generation's experiences with their coastal and marine resources have been voiced at community consultations of the project. There are no management plans at the island community levels to assist in managing these natural resources against threats of climate change. There are community calls and recent scientific

studies that have concluded the urgent need for coastal management plans if coral reefs, fishes are to provide any support for food security for the outer islands.

Review and assessments of legal and regulatory frameworks and instruments is needed by the government and states in order to position it strongly to implement mainstreaming of climate risks into its sector development programs. The lessons learned from the PACC project in Kosrae is that the BAU approach to coastal development will increasingly be a quick fix before the next typhoon hits, or a drought is worsened.

Adaptation Alternative
The project is planning to develop shoreline management plans for Yap, Chuuk and Pohnpei as a lesson learned from Kosrae under its PACC project. It will incur the most costs ($600,000 USD) because of the extensive consultation meetings and logistical and procurement costs involved due to the vast isolation of the four states, and the time required to carry out, development, consolidate and produce the plans.

Establishing of climate resilient engineering and construction (building) standards and protocols for future coastal infrastructure construction within each FSM State will take time and will be costly ($175,000). The total cost for delivering legislation and regulation changes, as well as providing the tools, scope and frameworks to deliver effective management of coastal and marine resources is budgeted at $1,075,000 USD.

Component 2 – integrated approaches for coastal zone protection for Yap, Chuuk, and Pohnpei.

Baseline Scenario
FSM has been carrying out coastal zone protection and enforcement of existing regulations largely through EPA (and KIRMA for Kosrae). The regulations are, however, based on scope and frameworks of EPA United States of America, many of which are not applicable or the resources required by the island to effect these regulations are not realistic.

There are initiatives that are carried out in isolation and ‘in-silos’ that require a concerted effort from a project of all of FSM. For example, the ecological surveys and monitoring activities in Yap State only will have benefited if there were enough resources to monitor and implement any actions identified, in particular, with coastal marine resource management program for the fishing population on the island.

Where initiatives exist to protect the island coasts including low-lying atoll islands, these are carried out relatively through an individual approach. There is less or no concerted effort to identify and demonstrate activities that are done in an integrated fashion.

Adaptation alternative
The six target islands of the three states are distant from the main islands where the key government and central business district is located. Logistics and procurement

activities will cost the project significantly, in areas such as transportation and communications and time. The consultations, environment risk assessments will take time and will require expert involvement to identify and demonstrate adaptive agriculture crops, water harvesting, and coastal marine resources management practices. Over time, it is expected incur costs totalling $2,750,000 USD.

Component 3 – Kosrae Shoreline Management Plan priority intervention measures.

Baseline Scenario
A full review of the Kosrae coastline has been carried out. The review has lead to the development of the Kosrae Shoreline Management Plan 2014 which has since been endorsed by the Governor of the State.

A number of priority interventions were identified and, in following up for upscaling of the PACC project results, all stakeholders (communities, government, NGOs, etc.) agreed to the priority intervention measures of the PACC project be implemented.

Adaptation Alternative
The government of Kosrae could not secure any funding to implement the first priority measures of the project. These measures have since been endorsed and supported by the communities, that they would be accepting these major investments. One of the reasons was due to the significant costs indicative by the KSMP 2014. I concur as to the importance of these projects.

The people of Malem community have clearly outlined, reiterated and repeated themselves in saying for the need to implement what has been identified in the KSMP 2014. This is with regards to the priority intervention measures outlined and costed in the KSMP that includes the coastal and community inner roads. The total costs including economic evaluation, environment response assessments, and contingency costs amounts to a budget of $2.9 million USD.

Component 4 – Knowledge management and capacity development for improved understanding on climate change impacts on the coastal zones and enhanced involvement of stakeholders

Baseline Scenario
FSM does not have national nor state level systems to capture new climate adaptation information that has and will continue to be developed over time. There is technology framework that has already been developed and assisted to by regional partners of FSM. For example SPREP developed a knowledge management online database through the Pacific climate change portal (https://www.pacificclimatechange.net). These could be used to store and capture information developed and collected by the project.

Adaptation Alternative

Approximately $1m is costed for this component targeting the understanding, knowledge, change in response, adaptive management, of the beneficiaries of the project. A number of trainings, lessons and learning workshops would be carried out. The knowledge and skills built from these workshops will set up the national, state and local teams to be in a better position to deliver on the adaptation activities outlined in components 2 and 3. Exchange visits to sites will be a key part of building knowledge and sharing it as quick as possible. These will allow exposure to methods, tools, hands-on learning of the various coastal management techniques that are available and being trialled at the different island environments of the project. The project will focus on enhancing two-way communication between scientists and traditional knowledge holders, educating the modern scientists and appreciating knowledge of the indigenous beneficiaries in natural resource management in the outer islands. The sustainability, relevance, effectiveness and efficiency of the project will rely on a large part to this component that will complete the bottoms-up and top-down approach of the project.

J. Describe how the sustainability of the project outcomes has been taken into account when designing the project.

The project has a strong country support at all levels of development intervention (national, state, community and individual). Following the 2013 and 2014 government, state and community consultations, the 2015 consultations in June and July of 2015 (outlined in Section II.H) re-iterated full support of the expected outcomes of the project.

Project Redesign

The 2015 consultations with stakeholders provided another opportunity to redesign the project components, outcomes, outputs and activities. The discussions with all communities and government stakeholders, one-to-one discussions between the OEEM/SPREP team and lieutenant governors[19], mayor of outer islands[20], key government officers[21] resulted in revising of components from three components to four (Table 11). The fourth component was acknowledged through consultations as a key component to capture the process and results of the project and that it must be explicit in the design of the projects.

Community Willingness

It was clear from the community consultations (Section II.H, Appendix A) the priorities identified by the communities themselves. It explicitly reaffirms their commitment in the priorities outlined in previous consultations and by the project. It also has secured their overall willingness to sustain the investments of the project. The level of willingness of

[19] Meetings with Lt. Governor of Pohnpei Lt. Marselo Peterson 21 June 2015, Lt. Governor of Kosrae Lt. Carson Sigrah – 6 July 2015

[20] Mayor of outer islands of Pohnpei, Henry Susaia, 24 June 2015; Mayor of Malem community, Mr. Grant Jonas, 04 June 2015

[21] Director of College of Micronesia, College Extension Services, re food security in the outer islands

the communities to support and sustain the investments beyond the lifetime of the project is therefore high and serious at the same time. Following this community support and meetings with government including high level representatives (lt. governors and governors), it was clear that the project required refinement to better align to government objectives. The project components were thus re designed to reflect these discussions as shown in Table 11 below.

Table 11 Revised project design following analysis of results of community consultations carried out June - July 2015.

ORIGINAL PROJECT DESIGN	REVISED PROJECT DESIGN – FOLLOWING JUNE-JULY 2015 CONSULTATIONS
Summary: • 3 Components and Expected Outcomes • 13 outputs • No clear set of activities • 3-pronged strategy	Summary: • 4 components / Expected Outcomes, • 10 outputs • 25 set activities • Integrated strategy
COMPONENT 1: STRENGTHENING NATIONAL INSTITUTIONAL AND CAPACITY DEVELOPMENT MEASURES TO SUPPORT DELIVERY OF CLIMATE RESILIENT COASTAL MANAGEMENT IN FSM	**COMPONENT 1. STRENGTHENING INSTITUTIONAL CAPACITY FOR COASTAL ZONE MANAGEMENT**
Outcome 1.0 Capacity developed for efficient and effective support at national level to deliver climate resilient policies and enforce regulations for the coastal zones of all FSM states.	1.0 Improved capacity for efficient and effective support at national level to deliver climate resilient policies and enforce regulations for the coastal zone.
Output 1.1: Legislative and policy support to help improve regulatory enforcement of climate resilient coastal and marine management for each FSM State;	Output 1.1 Legislation and policy paper to guide regulation of climate resilient coastal and marine management for each FSM State
Output 1.2 Preparation of Shoreline Management Plans for Yap, Chuuk and Pohnpei States with each defining sets of maintenance targets and integrate recurrent and capital expenditures.	Output 1.2 Approved Shoreline Management Plans (SMPs) for Yap, Chuuk and Pohnpei States
Output 1.3: Prepare Coastal Development and Environmental Policy Guidelines for each State to help link R2R and SMP policy direction.	Output 1.3 Coastal Development and Environmental Policy Guidelines developed for each State
Output 1.4 Establish climate resilient engineering and construction (building) standards and protocols for future coastal infrastructure construction within each FSM State.	Output 1.4 Establish climate resilient engineering and construction (building) standards and protocols for future coastal infrastructure construction within each FSM State
Output 1.5 Capacity developed to improve coordination for future Living with the Sea policy compliance (for each FSM State) including "performance measure" procedures for key staff/departments.	
Output 1.6 Strengthen the national knowledge and information system.	

ORIGINAL PROJECT DESIGN	REVISED PROJECT DESIGN – FOLLOWING JUNE-JULY 2015 CONSULTATIONS
COMPONENT 2: PRACTICAL INTERVENTION SUPPORT FOR THE STATES OF YAP, CHUUK AND POHNPEI ON TO IMPLEMENT CLIMATE RESILIENT COASTAL MANAGEMENT ("LIVING WITH THE SEA")	**COMPONENT 2. INTEGRATED APPROACHES FOR COASTAL ZONE PROTECTION FOR YAP, CHUUK, AND POHNPEI**
Outcome 2.0 Vulnerability of coastal communities and infrastructure investments to climate risks is reduced through construction of risk reduction adaptation measures and associated training and awareness programmes.	**2.0 Improved resilience of Yap, Chuuk, and Pohnpei coastal communities to climate change**
Output 2.1 Six (6) sustainable "Pilot soft coastal adaptation interventions" (incorporating food security and water /marine resource management where possible) on 6 atoll islands within the States of in Yap, Chuuk and Pohnpei.	Output 2.1 Six integrated soft coastal adaptation interventions completed on 6 atoll islands in Yap, Chuuk and Pohnpei.
Output 2.2 Training programmes for State Government and island specific technical on the delivery and enforcement of the institutional and capacity development measures (Component 1) identified to support climate resilient coastal management for the States of in Yap, Chuuk and Pohnpei (linking to Output 2.1).	
Output 2.3 Education and awareness programmes for the wider community on "Living with the Sea" principles for the 3 FSM States.	
COMPONENT 3: KOSRAE SHORELINE MANAGEMENT PLAN (2014): PRIORITY INTERVENTION MEASURES	**COMPONENT 3. KOSRAE SHORELINE MANAGEMENT PLAN PRIORITY INTERVENTION MEASURES**
Outcome 3.0 Increased climate resilience of coastal communities (Malem, Utwe, Pal, Mosral and Walung) through the effective delivery of priority engineering "climate proof intervention measures" as set out in the Kosrae SDP (2014-2023) and Kosrae Shoreline Management Plan (SMP).	**3.0 Increased resilience of Kosrae coastal communities to climate change**
Output 3.1 Intervention A: New road section construction (Malem to Yeseng) plus access routes to the two villages.	Output 3.1 Intervention A: New road section construction (Malem to Yeseng) plus access routes to the two villages.
Output 3.2 Intervention B: Transitional coast protection schemes (Mosral and Pal)	Output 3.2 Intervention B: Transitional coast protection schemes at Mosral and Pal

ORIGINAL PROJECT DESIGN	REVISED PROJECT DESIGN – FOLLOWING JUNE-JULY 2015 CONSULTATIONS
Output 3.3 Training programmes for the Kosrae State Government on the delivery and enforcement of the institutional and capacity development measures (Component 1) identified to support climate resilient coastal management for the State of Kosrae.	
Output 3.4 Education and awareness programmes for the wider community engagement on "Living with the Sea" principles for Kosraean villages.	
	COMPONENT 4. KNOWLEDGE MANAGEMENT AND CAPACITY DEVELOPMENT FOR IMPROVED UNDERSTANDING ON CLIMATE CHANGE IMPACTS ON THE COASTAL ZONES AND ENHANCED INVOLVEMENT OF STAKEHOLDERS
	Outcome 4.0 Capacity and knowledge enhanced and developed to improve management of coastal zones to adapt to climate change
	Output 4.1 Knowledge management plan covering all FSM beneficiaries to improve awareness levels and facilitate informed decision making to address risks to coastal zones and environment
	Output 4.2 Knowledge products for national use for all coastal communities pooled in and tailored to local contexts
	Output 4.3 Local and National Level Workshops, Learning & Trainings

The political and institutional sustainability is possible through a strong government support at national and state levels. Various stakeholders from the government and civil society were involved in the initial consultation process and (see Appendix A), and several of those agencies are keen in carrying forward the implementation of the top identified priorities as outlined in the recent consultations of June-July 2015 (Section II.H).

Long-term Sustainability

The long-term viability and sustainability of the project will also depend greatly on the extent to which national institutional capacities can be built through the implementation of the engineering pilot activities (Component 2). This will be achieved through capacity building at all levels (Component 4). Institutional linkages will be strengthened (Component 1) and community based adaptation measures will include innovative mechanisms for sustainable livelihoods, which in turn will enhance the sustainability of project outcomes (Output 2.1). The capacity building components of the project will empower stakeholders at all levels, from community members to State policymakers, all

with a greater understanding of climate change risks, adaptation options and enhanced adaptive capacity. A number of measures are planned, to set the grounds for ensuring long-term institutional, political and financial sustainability. A phased approach will enable interventions to be scheduled within the absorptive capacities of existing institutions.

A key strategy of the project in engendering institutional sustainability is to create partnerships at State levels and between national institutions. The strategy is expected to greatly enhance prospects for assuring institutional sustainability, building on existing regional competencies. Training at the community level will be supplemented through participation in workshops, information exchange between communities and institutions, to be facilitated by the project management unit. The cultural sustainability of the project activities will also be ensured through community participation in the design and implementation of atoll island specific interventions bespoke coastal defence structures using local materials and other livelihood activities. During consultations with local FSM coastal communities, community members expressed strong interest in climate resilient livelihoods and measures to reduce vulnerability from increasingly frequent extreme climate events.

Institutional Sustainability

This is important at local, State and national levels. At local levels, the main measures in the project design to achieve this are: training for local island communities; supporting existing agencies and experts; empowering communities and decision-makers; and; strengthening existing consultation and decision-making structures. AF resources will build on existing organisations (local governments) and processes.

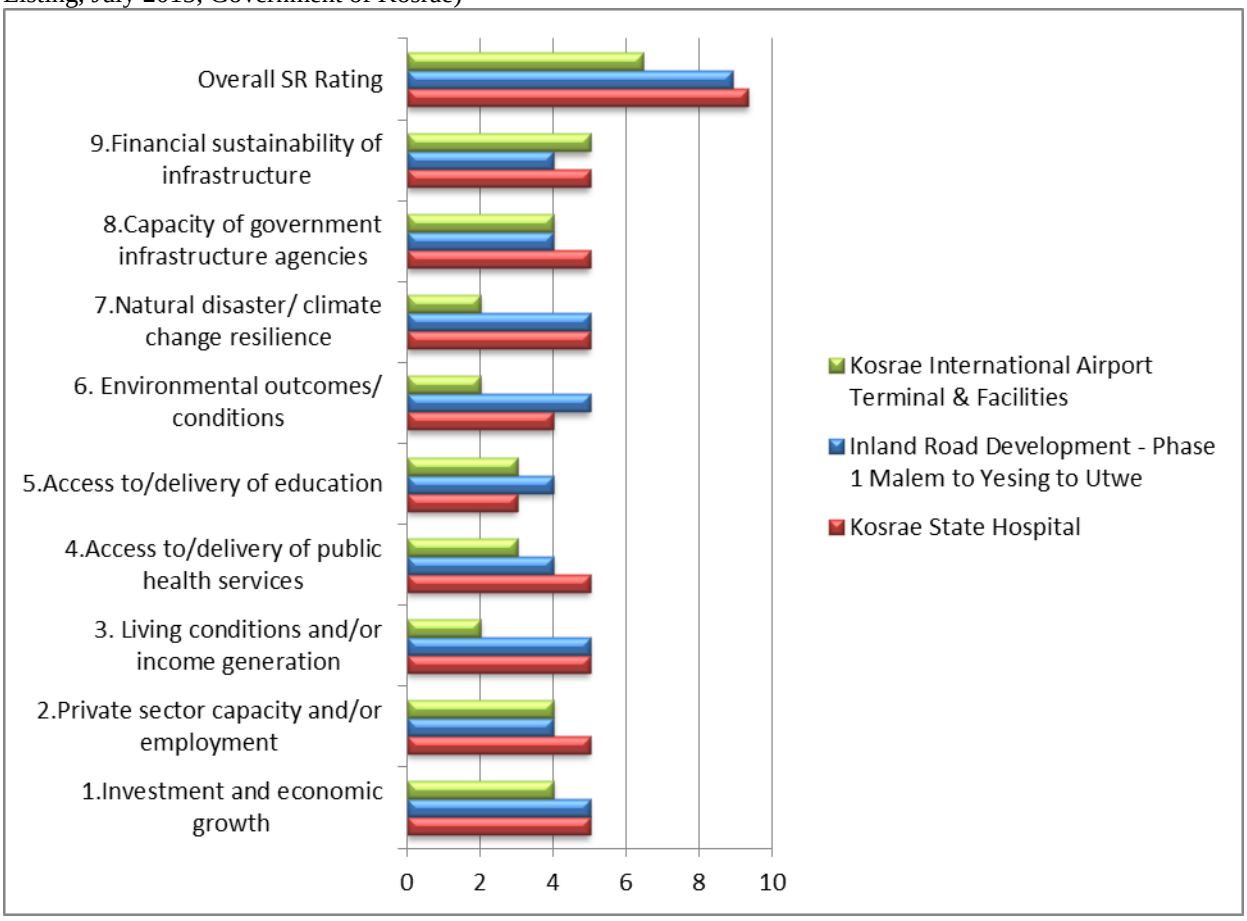
At the national level, although the stakeholders and issues are different, the approach to assure institutional sustainability is the same. Awareness raising initiatives to secure political commitment, and the direct involvement of several Ministries can help ensure that commitment as will the dedication of the OEEM. The involvement of OEEM shall give the political robustness it deserves for successful implementation.

Financial / Economic Sustainability

The recent communications and consultations with government (6 – 28 July 2015) has reaffirmed the government of Kosrae's full commitment in funding maintenance for the investment roads of Malem to Yeseng which the project is developing. The Infrastructure Policy Implementation Committee released its July listing that places Malem-Yeseng-Utwe road on number 5 out of 31 projects, and 3rd placing in the strategic rating (SR) criteria. Scoring an SR of 8.9 shows this road development for enhancing resilience of the coastal communities scores above average against all 9 criterions to only be 2 places behind the highest rating of 9.3 being the Kosrae State Hospital (refer chart below). The affirmation here means the government is obliged to include this development into its Infrastructure Maintenance Fund (IMF) (see chart below). This commitment from the project addresses the concern for who will pay maintenance of these roads, and therefore responding to the question of security of

investment into the long run. A particular summary of this listing including criteria for selection is highlighted in the below table.

Equation 1 Chart on the Strategic Rating score of 8.9 for the Inland Road Development (Output 3.1). (source, IPIC Listing, July 2015, Government of Kosrae)



Equation 2 Infrastructure Maintenance Fund listing of the Government of Kosrae denotes the Malem-Yeseng-Utwe road for maintenance in its IMF listing (source, IPIC Listing, July 2015, Government of Kosrae)

Project Title	Status	TEC ($,000)	Funding	Source
Malem Farm Roads (5.66 miles)	Fund Sourcing	566		SDP/IMF

The project takes, however, many steps to achieve financial and economic sustainability. First, the measures to be demonstrated are to be achieved at costs which are largely affordable in FSM (and use local materials where possible). By building capacity to undertake all steps in constructing these measures locally, this will further lower the cost of these measures – all capacity will be available locally. Further, the project will build local organisational capacity to demonstrate that, in the complex FSM context, communities can maintain the physical constructions.

Another step taken by the project is to build capacity in FSM to mobilise financial resources to coastal protection. Elements of this include (i) strengthening data and information management capacity, so that future designs can be improved and better targeted; and (ii) developing capacity to prepare proposals and designs, notably economic analysis capacity. It is important to note that the 'demonstration' aspect of the project has implications for sustainability. In part, the project aims to demonstrate innovation, and to capture lessons learnt. Both of these are processes which require ongoing financing. Once something has been 'demonstrated', it does not require demonstrating again, so the costs associated with demonstration can be one-off (and do not need to be recovered).

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

The potential environmental and social impacts and risks of the project identified in the checklist below is planned to be fully addressed through an environment and social impact assessment and environment and social risk management plan (ESMP). This is to ensure the project will be implemented and operated consistent with the Fund's Environment and Social Policy as well as in compliance with FSM's existing laws and applicable regulations. The plan or methodology to develop the ESMPs that will be in general application to each state project (or sub project) is provided in Annex L of the proposal.

The project's environmental and social impacts are well addressed within the design of the project, except for some of the project activities that may pose as potential risks to society and environment as a whole. The project is in full compliance for all Principles 1, 4 and 6.

Issues of land rights will need further assessment and management as a result of the new inner road that will be built under the project. The results of consultations with communities, in particular, with landowners show full concurrence to the development into their land. While accepting the new development into their land is awarded by all landowners (Appendix A), there is need for monitoring the concerns in order to safely address the risk and ensure compliance to matters relating to access and equity. This will also have bearing on the benefits and dis-benefits to the marginalized and vulnerable groups (for example, landless or no land where the new road will be built), and is closely related to issues of gender equity and women empowerment.

Annex L provides guidance on how the project would ensue the implementation of the ESMP to address the Fund's ESP in full compliance during project preparation stage.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
1 Compliance with the Law	• The Project is in compliance with all applicable FSM and international law.	None
2 Access and Equity	• The principle applies to the project but risk mitigation measures need to be taken to comply with the expected outcome of the principle. The project does not control or limit access to basic health services; education, clean water and sanitation. The activities would be designed not to refuse or restrict access to energy, housing, safe and decent working conditions, and land rights. All sub projects will be guided by the Methodology for the development of ESIA and ESMP for each state (sub) project (Annex L). The ESMP will be aligned to the requirements of the EIA Guidelines of Kosrae 2013. The community consultations provided an equal and fair opportunities to all concerned (men, women, persons with disabilities) in providing their inputs into selection of priorities that will benefit not just a few, nor the project, but all of FSM. These were discussed as seen in figures from consultation in Section II.H Stakeholder mapping exercises was carried out by each group of the community in all consultations with the objective to appreciate what the potential beneficiaries are, the rivals, potential disputants, the most vulnerable, and understand what services, data and information, where the data and information flow is, and how it benefits the islands and communities within the proposed project areas (Figures 15 – 18, Section II.H). The project would not be addressing issues of building homes or business on the land that is used for development of the inner road, as this lies outside of the scope of the project. Issues of	• Land rights, land tenure and security issues • Land use • Land access • Landowner benefits / dis benefits • Access and equity to person's with disability, women and children

	land rights, access and access benefits and dis benefits to landowners, land use in relation to the nature of the activities in outputs 3.1 and 3.2	
3 Marginalized and Vulnerable Groups	• The principle applies to the project but risk mitigation measures need to be taken to comply with the expected outcome of the principle. FSM does not have marginalized groups but only vulnerable groups. FSM's population is largely subsistent and highly relies on natural island resources to support their source of livelihoods. It is the unprecedented changes in the environment, exaggerated by impacts of climate change that has reduced the ability of people to adapt. Coupled with non-climate related pressures such as health and nutrition, high dependency on imports, the growing population in FSM are becoming increasingly vulnerable. Specific to the 7 communities that the project focuses, the beneficiaries of the project will be the women and girls, children, elderly, disabled people and men including persons with disabilities residing in the proposed project areas (Section I.1.9, Appendix G). These are the vulnerable groups to impacts of climate change in FSM The implementation of the projects, especially in highly populated regions will be designed to ensure that people's daily routines will not be disrupted, including interruptions to road access, transport, water and electricity supply. For example, the road constructions of outputs 3.1 and 3.2 will be planned to transition well to the point where traffic from Utwe to Malem and to the capital is not disrupted at anytime. This may include the construction of different parts of the inner road, access route and coastal walls at different times to allow for continuous access by vulnerable groups are not disproportionate to other members of the population residing elsewhere in Kosrae. While measures are in place within the project design to ensure marginalized and vulnerable groups needs are addressed, the project would require monitoring support to ensure that these needs are addressed and achieved. The benefits will contribute to the effectiveness of the	• Access and control of natural resources (reefs, mangrove forests, rivers, swamps) • Training, skills and knowledge in management of resources • Support in management of resources • Participation and decision-making • Low-level monitoring required.

	project meetings its own objectives	
4 Human Rights	• The Project is in compliance with all applicable FSM and international law. The proposed interventions respect and where applicable, promote international human rights. It does not foresee any violation of human rights	None
5 Gender Equity and Women's Empowerment	• The principle applies to the project but risk mitigation measures need to be taken to comply with the expected outcome of the principle. Gender assessments of the project will be one of the key activities that will be carried out to identify where gaps are and where capacity and training is needed. A gender action plan would be drawn up and implemented across the project components, monitored to ensure gender equity and equality goals are satisfactory. Particular reference to activities and project outputs that promote women empowerment. For example, the strengthening of women's councils role in project management (decision making role) and project implementation. Promote women committees in island communities where needed and will be supported by the project. These institutions will be set up, trained and capacity developed to implement, monitor and manage activities in the proposed project areas. Gender-perspective trainings are one of the key activities of the project that will be undertaken for all proponents of the project so as to ensure a gender-sensitized management and execution of the project. The activities that assist the beneficiaries realize their resilience	• Gender not mainstreamed leading to poor and ineffective project • Gender perspectives not embedded into planning and activity implementation • Participation and decision-making • Communications
6 Core Labor Rights	The Project is in compliance with all applicable FSM and international law. Payments to labor under the project will be made as per Government approved norms duly following minimum wage rate and hence ensuring core labor rights. Where regulations do not exist, ILO standards, procedures and norms will be referred to for assistance where applicable	None
7 Indigenous	• The project meets the outcome the principle.	None

Peoples	It is therefore compliant. All applicable international instruments relating to indigenous peoples would naturally be adhered to by the project with regard to any coastal protection scheme developed. The project identifies indigenous population as those that are native and live and own land and have ancestral ties to the island environments. It is common today for landowners that own the land in the project proposed, but all reside in the coastal community of Malem for the State of Kosrae and the majority of Chuuk, Pohnpei and Yap outer island are of similar case. The project pursues to seek FPIC from indigenous landowners that own land in which the project will be benefiting from. As such the project is, consistent with the UNDRIP requirements and has sought consent already of the landowners and community. Detailed outcomes of the consultations with the indigenous communities, of their priorities to be addressed under the project in relation to enhancing the capacity of the coastal zone to adapt, are outlined in Section II.H of the proposal. Appendix A provides evidence of mutual agreement of the indigenous population in support of the objectives and outcomes of the project.	
8 Involuntary Resettlement	• The principle applies to the project but risk mitigation measures need to be taken to comply with the expected outcome of the principle. For all sub projects in all 4 States, the project will not be incurring any physical or economic displacement. There will also be no involuntary resettlement costs – social and economic, with any of the proposed project areas. In Yap, Chuuk and Pohnpei, the water, agriculture and marine resource related activities will require	• Low-risk based on voluntary resettlement request through development of a community relocation strategy in view of the completion of the inner road. • Low-level monitoring is required

	working on existing sites already identified by the communities. Where taro patches are considered by communities, these will build on already identified pilot areas of the communities previously identified through other ongoing projects with the College of Micronesia – agriculture extension services program. As such, no unplanned or spontaneous settlement is expected. For the sub project in Kosrae, no physical or economic displacement is required as well. The project will only be concerned with the construction of the inner road and the two access routes from the existing coastal road to the inner roads. There are no activities within the project that will deal with movement involuntarily of any members of the community. The project, will however, assist, upon request by the communities support in developing a strategy for relocation for the community in the medium to long term. As such, in supporting the community in a voluntary resettlement approach. The communities discussed the development of a voluntary relocation strategy or program that will assist individual households and landowners to move inland. The results of the community consultations (Section II.H.5 and H.6, Appendix A Letter from the Office of the Mayor of Malem Municipal Government, dated 6 July 2015 and landowners support through their signatures) was clear in the need for a relocation plan and strategy for the community of Malem, but that the implementation of this strategy follow the successful implementation of output / investment 3.1 of the project. The landowners and communities supported further, the importance therefore of output / investment 3.2 - the transitional protection scheme at the Mosral and Pal road sections that are critically exposed. This is on the premise that this protect will 'buy time' for the community to execute the relocation strategy following the completion of output / investment 3.1. In developing the strategy, discussions between the Malem Municipal Government representatives, Kosrae State Government and partners agreed that a Terms of Reference for a	

	Working Group on Relocation be established and be attached to the project proposal (see Appendix I). The TOR will outline the work of the Working Group to develop the Relocation Strategy to address, control, manage, and develop a plan that will ensure voluntary settlement for the Malem community population. The key members that form up the Working Group include the representatives of Malem Municipal Government, landowners, Kosrae State Government, NGO representatives, Kosrae Women's Council representative, member of the private sector / business community or the Chamber of Commerce / Tourism representative, and the Kosrae Land Court. The community discussed some of the programs that may be included in the strategy and generally may include a separate project on a lending facility with low-concessional loans set up by lending institutions of FSM to the people of Malem, in view of the safer relocation options now provided by the new development under the project. The objective of the activity is to develop a strategy where the aim is to initiate a future concept on the implementation of such a strategy	
9 Protection of Natural Habitats	• The principle applies to the project and risk mitigation measures would need to be taken to comply with the expected outcome of the principle. The project will, as would be guided by the ESMP, follow FSM guidelines on EIA for the state of Kosrae, as well as relevant key regulations and enforcement acts, for the remaining three states, Yap, Chuuk and Pohnpei. The project would carry out the EIA requirements that would minimize as much the risks associated with its activities. For example the construction of the Malem inner road for Kosrae through Kosrae's forested areas. There will be risks and impacts associated with this activity and will be strictly adhered to (refer to Annex L).	• Loss of vegetation / forest cover • Erosion and sedimentation • Pollution and contamination • Habitat destruction • Loss of native biodiversity • Loss of genetic resources • Introduction and spread of invasive species

	The project will also refer to the various plans that exist and ensure it contributes to the objectives of these plans. They include the Biodiversity Strategy and Action plan 2004, Land Use Plan 2003, Shoreline Management Plan 2014, solid waste Management Plan 2010 – 2015 Throughout its implementation, the project will carry out high level monitoring by carrying out a number of assessment programs that ensure safeguards on aspects of the environment is maintained. These are built on baseline studies, strategies and programs such as the Kosrae Soils Survey 1983, State-wide Assessment and Resources Strategy 2010-2015 (USFS); Beach Profiling Project, Ecological Surveying and Coral Monitoring Program, Forest Health Monitoring Program, Erosion and Sedimentation monitoring program; and the Protected Areas Management Plans (Municipal Resource Management Committees) This Principle will be enforced through existing laws and regulations of FSM, during the implementation of the project. These include the Endangered Species Regulations (1988); Komokut (humphead Parrot Fish) Protections Regulation (2008), Regulations for Development Projects (2005, as amended); Regulation on Fill and Construction Projects Below the High Water Mark (October 2010); SCUBA Fishing Regulations (2010); Pesticides Regulations (2013); and Pollution Regulations (2013) and others	• Food insecurity • Land degradation • Contamination of surface and ground water • Draw-down and increased extraction of ground water • Erosion and sedimentation • Clearance of coastal vegetation
10 Conservation of Biological Diversity	• The principle applies to the project and risk mitigation measures would need to be taken to comply with the expected outcome of the principle. The project would not cause any impact on bio-diversity values of the project areas in the outer islands. The project may expect impact in terms of disruption of the biodiversity corridor in the Malem-Utwe area of Kosrae island as well as its ecosystem corridor from ridge to reef.	• Loss of vegetation / forest cover • Erosion and sedimentation • Pollution and contamination • Habitat destruction • Loss of native

	The project would carry out full assessment of its ESMP in designing of the project to minimize and avoid any significant reduction or loss of biological diversity or the introduction of known invasive species. As mentioned in Principle of Protection of Natural Habitats, all regulations will be enforced; monitoring plans carried out and integrated to ensure full compliance, as outlined in the ESMP plan for the project.	biodiversity • Loss of genetic resources • Introduction and spread of invasive species • Food insecurity • Land degradation • Erosion and sedimentation • Clearance of coastal vegetation • Ridge to reef ecosystem corridor interruptions
11 Climate Change	• The project meets the outcome of the principle The project is basically to adapt the natural and human systems in FSM to climate change. It is reducing vulnerability and increasing resilience of natural island systems at the coastal regions. The project is not expected to contribute to GHG emissions. In dealing with transportation to the outer islands, the project would take lessons learned from other programs in promoting 'ferry pooling' for government projects and programs to the outer islands. Project management, monitoring and evaluation activities to the outer islands for example will be planned around government ferry schedules or private and partner programs (United States Navy Pacific Partnership, US Coast Guard island visit programs - the project will take advantage of such partnerships for reducing its carbon footprint). The project will promote the use and building of traditional canoes (or diesel-hybrid versions where conditions are extreme) to carry out marine resource management activities.	None

12 Pollution Prevention and Resource Efficiency	• The principle applies to the project and risk mitigation measures would need to be taken to comply with the expected outcome of the principle. One of the project objectives is to better manage the natural resources such as water, forests, and reefs and as such aims not to create any environmental pollution. Kosrae's EIA guideline will be strictly adhered to and ensure all guideline requirements are met to reduce the impact of road construction onto the environment. Measures to reduce the impact of construction work on forest and water bodies where the pollution levels may be expected to exceed national and international standards will be closely monitored and reported. The project will undertake an assessment of the impact of the use of machinery and heavy vehicles during the construction activity on the Malem-Yeseng inner road and coastal roads – per the Kosrae EIA guidelines. An Environment Information Statement (EIS) is expected for the Kosrae investments (3.1, 3.2) and all safeguards requirements will be addressed. The waste generated during construction (e.g. tar, oil, plastics, cement bags) will be disposed of through a safe disposal mechanism following regulations already enforced by EPA and KIRMA. Littering will not be tolerated by the project management unit. Measures will be taken to ensure used oil and other pollutants and solid waste from the construction will not spread or left to leak into the water catchment areas, creeks and water ways. KIRMA will be leading in ongoing monitoring of the construction work. All incidents will be reported and dealt with per regulations in place. Any on-site establishments during construction of the roads will be discouraged and will be mandatory terms and conditions of third party contractors with the project.	• Loss of vegetation / forest cover • Erosion and sedimentation • Pollution and contamination • Habitat destruction • Loss of native biodiversity • Loss of genetic resources • Introduction and spread of invasive species • Food insecurity • Land degradation • Erosion and sedimentation • Clearance of coastal vegetation
13 Public	• The project meetings the outcome of the	None

Health	principle The impact on public and environmental health will be none to minimal. In the case of KIRMA, the public will not be allowed proximity or access to the construction sites of the two roads. Every precaution will be taken to advise any existing households nearby of the safety, health and environment hazards and concerns in relation to their health and the impact on the environment of the constructions. The EIA guidelines provide clear direction and guidance on measures that the project would take and safety, occupational healthy and safety standards that third party contractors (construction companies) will need to adhere to. The project will therefore follow protocols and procedures of the government that are in place	
14 Physical and Cultural Heritage	FSM does not have any World Heritage properties[22]. It is also one of two State Parties in the Pacific that has no process in place for preparing national level inventories for both Cultural and Natural Heritage properties. • This project meets the outcome of the principle The project, however, would still endeavor to be in compliance to the EIA process and ensure there is no alteration, damage, or removal of any physical cultural resources, cultural sites, and sites with unique natural values recognized as such at the community, national, or sub-regional (Micronesian) levels. In doing so, the project will include the aspect in its monitoring works	None
Lands and Soil Conservation	• The principle applies to the project and risk mitigation measures would need to be taken to comply with the expected outcome of the principle. The project activities in the outer islands are about promoting soil conservation and avoiding degradation or conversion of productive agricultural lands. The already poor and thin soils in the outer islands are the difficulties that the project is addressing to improve resilience to	• Erosion and sedimentation • Pollution and contamination • Habitat destruction • Land degradation • Erosion and

[22] 10A: Final report on the results of the second cycle of the Periodic Reporting exercise for Asia and the Pacific, UNESCO, Periodic reports, whc.unesco.org/archive accessed on 30 July 2015

	food production in the long term. In Kosrae, the designs of the infrastructures in output 3.1 and 3.2 will aim to promote and maintain the natural state of the land ensuring that it's functions of natural landscaping is maintained. The project meets this through the promotion of soil conservation and avoidance of degradation or conversion of the land in use and those influenced indirectly, or as a secondary or cumulative effect. There are generally three types of soil found in the project area from Malem to Utwe. The soils on uplands are known as the 'Fornseng-Oatuu' (60-100% slopes) – shallow and very shallow, well drained, steep to extremely steep soils. Soil on bottom lands, the common 'Nansepsep-Inkosro' is silty clay loam on 0-2 % slopes. These are very deep, somewhat poorly drained and poorly drained level and nearly level soils. The third soil type is found on coastal strands and in tidal marshes where the current coastal roads runs across. This is the 'Naniak-Insak' composed of mucky silty to peaty loamy sand, and are moderately deep and very deep, very poorly drained, level and nearly level soils[23]. Output activities in 3.1 and 3.2 will largely be developed on the nansepsep-inkosro soils. There may be some degree of loss in soils of the Fornseng-Oatuu in the high slopes to allow for some clearing of steep hills. There may also be some unavoidable losses at an insignificant level of naniak-insak type soils at the coastal levels. This is due to clearance of vegetation to allow space for the development of the inner and access route roads. These are un-avoidable as it will impede on the success of the project. Mitigation measures to minimize the loss of soil such as minimal tillage, diversions and contouring, plant close-growing grass and crops to minimize erosion and sedimentation will be promoted to minimize soil loss. The project would promote soil conservation through existing programs of KIRMA and KCSO	sedimentation • Clearance of coastal vegetation

[23] National Cooperative Soil Survey, 1983. Soil Survey of Island of Kosrae, Federated States of Micronesia, United States Department of Agriculture

	such as reforestation activities in degraded areas, increase awareness, promote use of sediment traps and silt screens to minimize erosions and outflow of sediment. The project would ensure the terms of reference of all infrastructure related activity of the project would include principles of soil conservation. The project would ensure that the KIRMA – as the management unit of the Kosrae project would monitor these requirements as part of the implementation work.	

Project Category

Results: Project Category: B

The initial assessment of the above checklist shows that this project lies in the B category of the environmental and social risk categorization. As per ESP, the project potentially has adverse impacts that are less adverse than Category A because overall they are smaller in scale, less widespread, reversible, and easily mitigated based on the policies, procedures and standards in place by government at the state level to address these impacts and risks.

ENVIRONMENTAL AND SOCIAL PRINCIPLES	COMPLIANCE	MEASURES**
Compliance with the Law	In compliance	
Access and Equity	Mitigation measures need	Easily mitigated
Marginalised and Vulnerable Groups	Mitigation measures need	Smaller in scale
Human Rights	In compliance	
Gender Equity and Women's Empowerment	Mitigation measures need	Smaller in scale
Core Labour Rights	In compliance	
Indigenous Peoples	In compliance	
Involuntary Resettlement	Mitigation measures need	Smaller in scale
Protection of Natural Habitats	Mitigation measures need	Reversible
Conservation of Biological Diversity	Mitigation measures need	Reversible
Climate Change	In compliance	
Pollution Prevention and Resource Efficiency	Mitigation measures need	Easily mitigated
Public Health	In compliance	
Physical and Cultural Heritage	In compliance	
Lands and Soil Conservation	Mitigation measures need	

**Details of measures to mitigate are outlined in the draft ESMP provided in Annex L

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

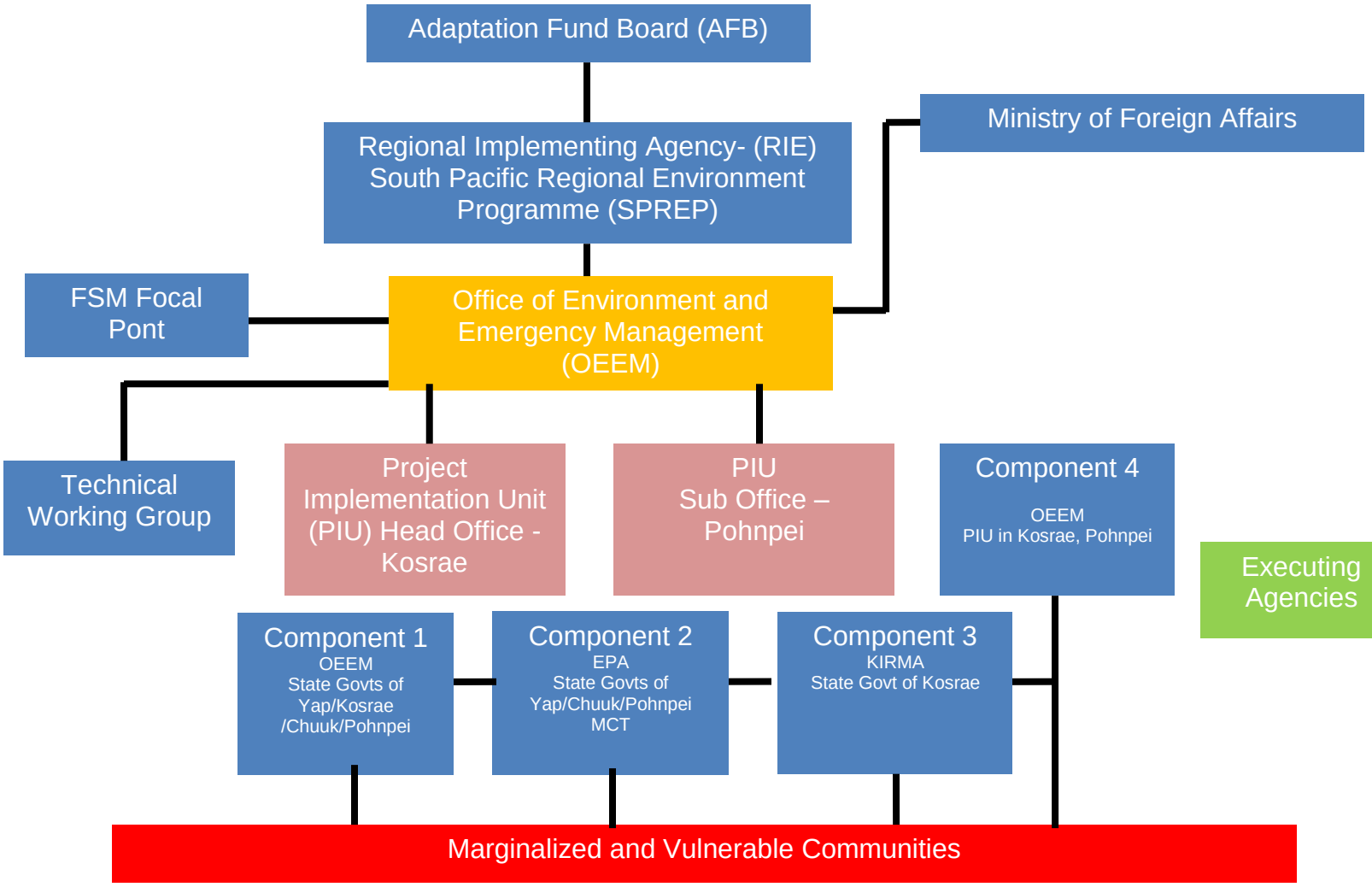


Figure 20: Indicative Organizational Outline

The project would be implemented through SPREP (being a Regional Implementing Entity for AF), with the Office of Environment and Emergency Management (OEEM being the central coordinating body for climate change activities in FSM) serving as the designated national executing agency ("Implementing Partner") of the project. OEEM will have the technical and administrative responsibility for applying AF inputs in order to reach the expected Outcomes/Outputs as defined in this project document. OEEM is responsible for the timely delivery of project inputs and outputs, allocating resources in an effective and efficient manner, and in this context, for the coordination of all other

responsible parties, including other line ministries, local government authorities and/or agencies.

Upon the request of the Government of FSM, SPREP will serve as the Regional Implementing Agency (RIE) for this project. Services that SPREP will provide to the Implementing Partner in support of achieving project Outcomes are outlined in the RIE budget notes in Section G. SPREPs services will be provided by staff in the Multi-Country Office (Samoa).

Institutional arrangement for the implementation of the project and their role in the project is as follows:

A **Project Board** (PB) will be responsible for approving key management decisions of the project and will play a critical role in assuring the technical quality, financial transparency and overall development impact of the project, will be established as soon as this project is approved. The PB will be composed of a designated senior-level representative of the OEEM, one senior representative each of the State Governments and one senior SPREP as the RIE. OEEM as the EE will serve as the Secretariat for the project. Reporting to the Project Board will be project managers of each state, the Head PIU Office in Kosrae and the sub-PIU office in Pohnpei. The observing parties will be SPC / Micronesia Trust / Micronesia Challenge or any of the active and key sub-regional offices of Micronesia. A complete list of PB members and their designated alternates will be provided in the initial project inception report.

The **CEO of OEEM** will be appointed as the **National Project Director (NPD)** acting as the **Secretariat to the Project Board** and will be responsible for ensuring the overall smooth implementation of the project in line with planned project objectives and outcomes as identified in this project document. The NPD will provide strategic support as needed to the project, particularly to ensure strong engagement from key national and local stakeholders and ensure that members of National Environment Coordinating Committee (NECC), comprised of CEOs of line Ministries/Departments, are fully informed of the high-level policy objectives of the project. The costs of the NPD role will be borne by the Government of FSM as in-kind contribution to the project.

National Project Manager (NPM) will be a dedicated professional designated for the duration of the project and report to NPD. The NPM's prime responsibility is to ensure, under the overall guidance from the PB, 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.

The NPM will be supported by a core team of technical and support staff forming the **Project Implementation Unit** (PIU) located within the OEREM to execute project activities, including day-to-day operations of the project, and the overall operational and financial management and reporting. PMU will comprise a full-time island coordinator, initially based in Kosrae and an administrative/financial assistant. A "satellite" support office shall be set up within the office of SPC in Pohnpei with a separate administrative

assistant based there for national coordination purposes. The PIU will work closely with the State Governments of all 4 States in FSM, to ensure that the coordination with other donor or publicly funded initiatives toward achieving national priorities is ensured (e.g.: direct links with the EU-GCCA and PPCR projects to be based in Pohnpei). A local coordinator will be recruited as a full time staff to oversee progress of technical project components under the guidance of the NPM. Following the project start in Pohnpei/Kosrae, a **Technical Working Group (TWG)** will be formulated for the duration of this project, comprising of national experts from different States and Departments (e.g.: Dept. of Public Works and EPA), to assist the PIU on the technical dimensions of the project execution. The TWG shall be chaired by the NPM and shall meet on a fortnightly basis. The National Climate Change Committee (NCC) represented by State Governors and of key line ministries will be kept abreast of project progress and challenges through the representation of CEO in the NCC as well as vertical reporting from respective officers in TWG.

Project assurance: A Country Development Manager (CDM) located in Pohnpei, FSM and Multi-Country Office located in Pohnpei, will support project implementation by assisting in the monitoring of project budgets and expenditures, contracting project personnel and consultancy services, and subcontracting and procuring equipment at the request of the FSM Government. On the technical side, the CDM and SPREP will monitor progress of project implementation and achievement of project outcomes/outputs as per the endorsed project document. A designated Programme Officer will be assigned in the MCO to provide financial and technical monitoring and implementation support services.

The Government of the FSM has requested SPREP (now a RIE) assistance in designing and implementing this project, due to SPREPs track record in FSM through the recent PACC project whose funding expires in December 2014. SPREP has well-developed working relationships with the key stakeholders. It counts on the CDM exclusively dedicated to FSM's affairs. This officer is supported by other programme, operations and Senior Management staff at SPREPs Multi-country Coordinating Office's. Moreover, the project will benefit from the presence of a dedicated project officer currently in the new PACC offices in Kosrae plus also the SPC EU-GCCA offices in Pohnpei. SPREP also has extensive experience in integrated policy development, human resources development, institutional strengthening, and non-governmental and community participation.

SPREP shall, early on in the project, decide on the need for engagement of specialist advice from CROP agencies (most likely as part of the inception work for the AF project). SPREP shall also utilize the Regional Technical Support Mechanism (RTSM) that is designed to deploy technical support in a short space of within three months.

B. Describe the measures for financial and project / programme risk management.

NO	TYPE	DESCRIPTION	COMMENTS / MITIGATION MEASURES	*RATING*

NO	TYPE	DESCRIPTION	COMMENTS / MITIGATION MEASURES	*RATING*
1	Institutional	Lack of manpower within executing agencies cause delay or insufficient level of implementation	The project will be designed with a particular attention on the manpower constraints in State Government departments. The project will therefore place a strong emphasis on community, CSO and the private sector engagement to the extent possible and the implementation plan will be designed accordingly.	*Medium*
2	Environmental	Extreme natural disasters affect the implementation of climate change adaptation measures on the ground	Tropical cyclones are becoming more frequent and intense. In the last three decades, FSM received on average around 1.5 cyclones per year. If a large-scale tropical cyclone hits the country, all of the government functions will be diverted to emergency response measures. While the project cannot directly control the occurrence of cyclones, the project work plan is set to provide sufficient time buffer to catch up with potential delay. Further, the designs of equipment installed in the project will take into consideration intensifying natural disasters to withstand such events.	*Medium*
3	Environmental/ Social	Adaptation measures increase inequity	The project will ensure that the adaptation measures are gender sensitive and demonstration at the local level that they do not limit the participation of women and the disabled as beneficiaries. In addition, lessons learned from the three target islands will be accumulated and disseminated throughout the project cycle so that other islands that are not covered in this project will see benefits of learning from earlier experience.	*Low*
4	Financial	State Governments are not able to mobilize sufficient resources to replenish the small grant mechanism	SPREP will provide assistance in approaching potential donors, combining, sequencing and ultimately mobilizing additional climate change financing	*Low-Medium*
5	Social	Community acceptance of soft engineering shoreline protection measures proposed by the project	During the consultations that took place in FSM States in December 2013, the discussions resulted in high level political support if any help could be given to the outer island atoll communities of Yap, Chuuk and Pohnpei. Communities are acutely aware of both on-the-ground actions needed and of the financing constraints the government is facing. So it is likely that the acceptance by communities of concrete interventions proposed under Component 2 is high. The inception phase of the project will involve a series of awareness raising activities about proposed measures, which will also contribute to smooth acceptance of these measures for the selected States in FSM.	*Low*
6	Institutional	Weak coordination within and between State and national government and other stakeholder institutions responsible for land/coastal management; limited capacity (especially at lower levels) to interact with land users	The project will support and facilitate activities to ensure improved institutional coordination, capacity building and awareness-raising at the national, State and municipal levels. Where possible, formal agreements will be used to define roles and responsibilities. Training will be provided to stakeholders on conflict resolution. Activities will be designed and implemented in a win-win manner, beneficial to all, as far as possible. The sustainable development of the landscape will be emphasized with arguments that are supported with long-term economic forecasts.	*Medium*

NO	TYPE	DESCRIPTION	COMMENTS / MITIGATION MEASURES	*RATING*
7	*Institutional*	*State run ships to outer islands are unreliable and very slow to get to many outer islands, and only stay on island for half a day (on average).*	*A budget is included in Component 2 to ensure that the possibility of chartering a survey vessel is an option to ensure that the best possible opportunities are provided to set up and implement meaningful and tangible soft coastal engineering schemes on outer atoll islands.*	*High*

Table 10: Risk Management Measures

In addition to those identified in Table 10, the main risks for the implementation of the project are:

(a) Conflict between stakeholder groups/land owners with different political agendas results in an inability of sectors and/or States to cooperate at the level needed to achieve results;

(b) Pressing domestic economic and social issues such as poverty and human health issues imply that regional climate change and sea level rise impacts on coastal communities receive sub-optimal attention and investment;

(c) There is sufficient numbers of regionally based experts (especially coastal engineers) to fulfil implementation needs of the project including building individual capacities in the region;

(d) Participating communities in each State will not be able to agree on the mechanisms necessary to achieve sustainability; and

(e) Important local level stakeholders (communities, planners, tourism industry stakeholders) will see ecosystem based management efforts as being detrimental or unaffordable given their interests.

In addition to this, and again in keeping with SPREP practice, a dedicated budget line exists for Monitoring and Evaluation (M&E), to ensure that the necessary resources are allocated to execute the M&E framework.

The budget for Project Management (Execution) is shown on Table 12 below.

Table 12 Project Management (Execution) Costs

ITEMS	MONTHS	$/MONTH	TOTAL (US$)
6 core staff members (3 full time and 3 part time field officers per State)			248,000
Office Rent (OEEM/KIRMA office support)	50	370	18,500
Equipment, supplies, misc.	50	350	17,500

ITEMS	MONTHS	$/MONTH	TOTAL (US$)
Vehicles and travel	48	1,000	48,000
Monitoring and evaluation			167,175
TOTAL			499,175

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

The key measures being proposed to address and manage environmental and social risk, in line with the AF Environmental and Social Policy include the following:

SPREP shall consider and manage environmental and social risks (as presented by the project) by integrating risk assessment procedures and management processes into day to day procedures. An initial screening for environmental and social risks has been carried out by SPREP following consultations from the communities and further technical information collected in response to the ESP. As a result, a Methodology for Development of Environmental and Social Management Plan is outlined in Annex L of the list of appendices that is expected to guide the project – during the full project preparation stage – to a full Environment and Social Risk Management Plan (ESMP).
The objectives of the ESMP are:

- To assure that any environmental and social risks will be adequately and timely addressed in the project and that the changes required in the project design to address the risks warrants the highest level of commitment of the Executing Entity, the Implementing Entity with support and endorsement of the Project Board.

- To outline the risk mitigation measures that will be taken to ensure the project will be implemented and operated consistent with the Adaptation Fund's Environment and Social Policy Principles and in compliance with Federated States of Micronesia's existing laws and applicable regulations.

- To present monitoring and evaluation arrangements therefore be included in the project/programme proposal document and Inception Report (the Work Plan). There will be particular attention towards ensuring that vulnerable groups, including gender considerations are inculcated into the working procedures of SPREP, OEEM and any supporting consultancy that the project requires."

SPREP shall ensure that the Fund's Environmental and Social Policy document shall be closely adhered to throughout the duration of the project. Screening exercises and policy delivery shall be important components of the project delivery mechanism. Environmental and Social Management Plans, clear monitoring, reporting and evaluation programmes coupled with appropriate grievance mechanisms and public disclosure consultations will be key measures to ensure this happens.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

The monitoring and evaluation (M&E) scheme will be applied in accordance with the established SPREP procedures throughout the project lifetime. This shall ensure the timeliness and quality of the project implementation. The M&E plan will be implemented as proposed in **Error! Reference source not found.**. Technical guidance and oversight will be also provided from SPC (as a collaborative partner from its base in Pohnpei) and SPREP based in Samoa, as well as the Project Board (PB).

The following sections outline the principle components of the Monitoring and Evaluation scheme and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at an Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities

Project Inception Phase

Inception Workshops (IW): A series of five Inception Workshops will be carried out by the project within three months of project start and the first tranche of funds have been received. These include four state level inception workshops and one national inception workshop. A full project team with assigned roles in national government, OEEM, KIRMA, SPREP and where appropriate and feasible, collaborating partners of the project and technical advisors will lead the workshop. The IW is crucial to building ownership for the project results and to plan the first year annual work plan.

The project would initiate with four state inception workshops and conclude with the national and overarching workshop. The key objectives of the state level workshops would be two-fold. The NIW would aim to refine the activities of the project to allow the state project implementation agencies and state-level stakeholders better understand how and what is required to support the project. The second objective is to ensure all initiate development of the knowledge management and capacity development plan (activity 4.1.1) with the view to refine these plans at State inception workshops. The state level workshop objectives are:

- To review stakeholder analysis for each project;
- To review and check through the logic of the log frame;
- To review baseline and target indicators are aligned (state and national outcome indicators);
- To draft a knowledge management and capacity development plan;
- To draft a stakeholder capacity needs assessment in management of the project;
- To decide on monitoring protocol for indicators; and
- Clarify clear project boundaries (both technical and geographical)

The national level inception workshop will amalgamate the results of the four states inception workshops and fundamentally move to assist the national team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's strategic results framework (Table 12). The activities of the workshop include:

- Reviewing the strategic results framework (indicators, means of verification, assumptions), imparting additional detail as needed;
- Agree upon the first Annual Work Plan (AWP) with measurable performance indicators;
- Introduce support processes and technical backstopping mechanisms available;
- Provide information on communication infrastructure for project implementation;
- Clarify the governance structure for the project; and
- Agree on the monitoring and evaluation process including provisions of training on project management skills and execution;
- Accomplish with precise and measurable performance indicators, and in a manner consistent with the expected Outcomes of the project.

The inception workshop would be the opportunity to understand the project 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 and decision-making structures will be discussed and clarified, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase

The national inception workshop will also provide the first annual meeting of the Project Board (PB) with responsibilities over management decisions including approving implementation work plans and budget revisions, identifying problems, suggesting actions to improve project performance. The PB, chaired by OEEM and co-chaired by SPREP, will agree and adopt a coordinated implementation strategy of the project and its partners, as well as endorse the project's first year's annual work plan.

Inception Report. A Project Inception Report (IR) will be prepared immediately following the series of Inception Workshops. It will include a detailed first year/AWP divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project The Report will also include Appendixes of detailed project budget for the first full year of implementation, prepared on the basis of the AWP, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months' time-frame.

The Inception Report will include the agreed detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners that were discussed in the workshops.

Annual Progress Report (APR): The APR shall be prepared by the National Project Manager and is to be presented at the Annual Review Meeting for endorsement. The APR will be prepared with progresses against set goals, objectives and targets, lessons learned, risk management and detailed financial disbursements.

Project Annual Review (PAR) Meeting: An Annual Review Meeting shall be conducted annually, with the first meeting a year following the National inception

workshop. The meeting will be a high-level review meeting where key representatives of major stakeholders of the project are represented. The objective of the meeting is to review progress, discuss results, challenges and opportunities. Recommendations of the progress review meeting will be the key outcome of the meeting. The recommendations and report of the annual review meeting is submitted to the Project Board for endorsement for action.

Project Board and Project Board meetings: The Board is represented by high-level representatives of the implementing entity, executing entities (OEEM, KIRMA) and FSM State representatives of government. The Board will also include high level representatives of the communities in the project proposed areas. The Board will meet annually at the auspices of the PAR. The Board will call meetings immediately following the PAR meetings. The objective of the board meetings is to discuss recommendations of the project progress and way forward as agreed to and presented by the PAR meeting outcomes. Agreement and approval of the direction and way forward from the Board in view of the recommendations of the PAR will be key outcomes. The outcomes of the Project Board, including approved APR of the project is shared and submitted to the Donor via SPREP as the RIE.

Mid-term review of the project cycle: The project will undergo an independent Mid-Term Evaluation (MTE) at the mid-point (24 months) of project implementation. The MTE 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. The findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term.

Periodic Monitoring through site visits: SPREP (or nominated collaborative parties) will conduct visits to project sites based on the agreed schedule in the project's Annual Work Plan to assess, at first hand, project progress. Other members of the PB may also join these visits.

Project Closure: An independent Final Evaluation will take place 3 months prior to the final PB meeting. The final evaluation will focus on the delivery of the project's results as initially planned and as corrected after the mid-term evaluation, if any such correction takes place. The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals.

Independent Evaluation

The project would carry out at least two independent external evaluations as follows:

Mid-term Evaluation: A Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will be independent and will

determine progress being against the strategic results framework. It will identify a list of recommendations that are designed to direct and further achieve the Outcomes of the project.

The evaluation will address effectiveness, efficiency and timeliness of project implementation. It will check the relevancy of the project activities so far carried out by the project. It will outline risks and issues that relate to the management and implementation of the project. The list of recommendations will highlight decisions and actions that require responses and execution. The evaluation will review and suggest lessons in relation to the design, implementation and management of the project. The findings of the evaluation will inform the final half of the project period.

Final Evaluation: The project will undergo a final evaluation that will be carried out within three months following implementation closure of the project. The evaluation will be carried out by an independent evaluation time. A final project annual review (PAR) meeting will be conducted following the completion of the final evaluation report. All stakeholders will review the report and the final PAR meeting will be to present, discuss, finalize and endorse the final evaluation report of the project.

The content of the evaluation report will include progress towards the outcome of the project. It will review any immediate impact and sustainability of results of the project. It will outlines results against the strategic results framework and provide a conclusion, of whether or not the project has achieved its goal, objectives, outcomes and outputs it set out to implement. A review on the contribution to capacity development and knowledge management in FSM would be presented in the report. The report will outline key management and capacity recommendations highlight results, lessons learned, best practices. It must amalgamate these results into a section of the report, designed to be useful for future projects and or programs of FSM.

As the regional implementing entity, SPREP will be in charge of organizing this management of both the mid-term and final evaluation activities. This will include drafting of the Terms of reference, procure the evaluation team, manage the logistics maintain the time period of the review, and ensure reports are submitted on time.

Table 13 M&E Plan outline and costs

TYPE OF M&E ACTIVITY	RESPONSIBLE PARTIES	BUDGET US$	TIME FRAME
Series of Inception Workshops (4 State + 1 National)	▪ Project Manager ▪ SPREP	30,000	Within first three months of project start up
Inception Report	▪ Project Team ▪ SPREP	3,000	Within three months from IW
Measurement of Means of Verification for Project Progress on output and implementation	▪ Oversight by Project Manager ▪ Project team	5,000	Annually prior to Annual Implementation Review and PB Meetings re Annual Work Plans
Project Annual Review (PAR) and Project Board meetings	▪ OEEM ▪ Project Board	25,000	Annually (mid-year or in agreement)
Periodic progress reports	▪ Project manager and team	0	Quarterly, Six-monthly Annually
Mid-term Evaluation	▪ SPREP ▪ Evaluation (external)	20,000	At the mid-point of project implementation.
Final Evaluation	▪ SPREP ▪ Evaluation team ▪ OEEM	20,000	At least one month before the end of project implementation
Auditing	▪ SPREP ▪ OEEM	7,000	Following SPREP finance regulations and rules
Monitoring & evaluation site visits	▪ Project staff ▪ Government representatives	57,175	At all stages of project implementation
Total Indicative Cost		**167,175**	

E. Include a results framework for the project proposal, including milestones, targets and indicators.

A fully endorsed stakeholder results framework for the project proposal, including milestones, targets and indicators is presented in the following table.

Table 14 Strategic Result Framework for the Project

PROJECT STRATEGY	INDICATOR	BASELINE	TARGET	SOURCES OF VERIFICATION	ASSUMPTIONS
Objective: **To strengthen the ability of FSM to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner.**	Number of national policies and related coastal planning and regulatory instruments are enhanced in ways that support the effective delivery of sustainable coastal management for all 4 States.	Relevant national coastal policy instruments, coordination mechanisms and institutions do not address climate risks in an adequate manner. States (other than Kosrae) have no formal mechanism for addressing coastal risks in a pro-active, integrated and strategic manner.	By the end of the programme, at least 1500 households and 100 public officers, (collectively in all 4 FSM States) have increased their adaptive capacity By the end of the program, all 4 States have management plans, tools and regulations that enable the government to manage its natural resources and development to be resilient to threats of climate change	Project implementation, technical and training workshop reports. Community consultations and surveys on perceived risk reduction. National and sectoral coastal policy documents and island level coastal adaptation plans.	Availability of necessary expertise and experience to undertake activities required to integrate coastal risk management into relevant policies and other instruments. Political will and commitment by senior government officials to integrate coastal risk management. Strong coordination amongst coastal stakeholders in all FSM States. Strong community leadership and support for, and engagement in project activities in all 4 FSM States.

PROJECT STRATEGY	INDICATOR	BASELINE	TARGET	SOURCES OF VERIFICATION	ASSUMPTIONS
Outcome 1: Improved capacity for efficient and effective support at national level to deliver climate resilient policies and enforce regulations for the coastal zone.	Number of national policies and related instruments developed and improved Number of State Government staff with job descriptions that make reference to climate and coastal risk management and who have received relevant training.	Relevant national policy instruments, coordination mechanisms and institutions do not address coastal risks in an adequate manner. Climate and coastal risk management are seen as the sole responsibility of the OEEM and of respective State wide Departments *(such as KIRMA in Kosrae etc.).*	At least four different and relevant national level policy instruments (guides/standards/plans or procedures), and coordination mechanisms are set up to help implement integrated coastal zone management that is applicable for all FSM States. At least 100 State wide government staffs (with responsibilities for sustainable development in the Outer Islands) have job descriptions that make reference to ICZM best practices at the outer island that include environmental leadership related tasks and activities By the end of the 2nd year, 3 additional State wide SMP action plans are approved by each State Governor, and harmonized with State Development Plans in Yap, Chuuk and Pohnpei. By the end of the programme at least four training packages receive positive evaluations in independent assessments.	National policy documents Ministry Corporate, new SMPs and updates to State wide Strategic Plans; Annual reports of ministries and other government agencies; Project reports; Project monitoring and evaluation reports; Annual reports of ministries and other government agencies.	Political will and commitment to ensure plans and planning "tools" are prepared in a fully participatory manner. Strong community leadership and support for, and engagement in project activities in all 4 States. Availability of staff to be trained on delivery of the "Living with the Sea" Policy Framework and associate planning tools.

PROJECT STRATEGY	INDICATOR	BASELINE	TARGET	SOURCES OF VERIFICATION	ASSUMPTIONS
Outcome 2: Improved resilience of Yap, Chuuk, and Pohnpei coastal communities to climate change	At least 3 "soft" coastal adaptation risk reduction measures on outer Islands within Yap, Chuuk and Pohnpei States carried out, monitored and evaluated to have impacted and improved resilience in proposed areas and communities	Ad-hoc soft engineering" projects are carried out in other islands. Programs carried out by various stakeholders (government, private sectors, and academic institutions) in the Outer Islands are not consolidated and implemented under island development plans that exist. Community DRR and CCA plans do not exist in the outer islands or are outdated and are not implemented	By the end of year 1 of the programme, project focal points have been appointed and fully operational (within each State Government). By the end of the programme at least 4 soft engineering schemes have been constructed on at least 4 separate Outer Islands within the States of Yap, Chuuk and Pohnpei, increasing the resilience to climate change to at least 1200 households (on 6 islands).	Reports of island councils, and secretaries. Site/field visits and surveys. Project reports Project monitoring and evaluation reports. Training evaluation reports	Strong island and community interest in, support for, and engagement in capacity building activities in the Outer Islands of each State. State Governors can identify the need for, and oversee implementation of interventions that address coastal adaptation in a pro-active, integrated and strategic manner. Strong island and community interest in support for and engagement in the design and construction of soft coastal adaptation measures that will not only enhance island and community resilience, but is designed with attention to "planning for" future climate risks. State Governments of Yap, Chuuk and Pohnpei can oversee implementation of infrastructure projects that will enhance island and community resilience.

PROJECT STRATEGY	INDICATOR	BASELINE	TARGET	SOURCES OF VERIFICATION	ASSUMPTIONS
Outcome 3: Increased resilience of Kosrae coastal communities to climate change	Km of coastline with climate resilient shoreline protection or inland road reconstruction measures introduced on Kosrae. Km of inner road developed to climate resilient standards Community perception is positive for minimal impact of road on environment A relocation strategy is developed through the period of the project, collaborated by the community, government, NGOs, private sectors and development partners	Malem coastal road highly exposed to severe coastal erosion and is in high risk of being washed away within the next 10 - 30 years Unsealed inner road limits access of communities inland KSMP 2014 provides guidance to the priority measures that is needed, and has been costed to respond to the high risk shoreline, coastal roads and residential area in Malem. There is concern for how to relocate from communities and what is required to relocate to the new area of settlements created by the development of the new roads.	By the end of the project, the Malem-Yeseng road constructed with electricity poles installed and plans for water lines to be added developed. That the roads have been constructed to climate-proof standards. By the end of the project, the two inner roads from Malem and Yeseng village communities connecting the coastal and Malem inner road has been constructed to climate-proof standards. By the end of the project, minimal impact on the environment, and other measures taken (such as mangrove replantation in strategic areas) have been implemented and planned to absorb any shocks in the environment as a result of the road constructions. By the end of the programme at least 6000 inhabitants of Kosrae have increased coastal resilience to inundation and erosion.	Documents on lessons learned, best practices and case studies Project reports E-mail exchanges with other countries Project monitoring and evaluation reports Independent evaluation reports Training evaluation reports Reports of State Governors.	Island stakeholders and key players (e.g.: Kosrae State Government) have a high interest in, support for, and engagement in capacity building activities in Kosrae. Political will and commitment from the community and government Continuous support provided by the government and development partners.

PROJECT STRATEGY	INDICATOR	BASELINE	TARGET	SOURCES OF VERIFICATION	ASSUMPTIONS
Outcome 4: Capacity and knowledge enhanced and developed to improve management of coastal zones to adapt to climate change	An overarching knowledge management and capacity develop plan developed, disseminated and accessed. Percentage of beneficiaries trained in soft coastal engineering measures (construction, monitoring, etc.) Number of knowledge products (training materials, etc.) generated on lessons learned and best practices. Percentage of beneficiaries that understand and comply with natural resource control and management measures	Ad-hoc soft engineering" projects are carried out in other islands. Programs carried out by various stakeholders (government, private sectors, and academic institutions) in the Outer Islands are not consolidated and implemented under island development plans that exist. Absent of training materials, modules, guides, manuals, procedures in coastal risk management, adaptation planning, and in implementing of climate-resilient coastal management practices.	By the end of the year, evaluation results show progressive execution of the KM and CD plan developed for the project By the end of the 3rd year, at least 100 government staff with responsibilities for sustainable development in the Outer Islands trained on resource management planning, policy framework delivery and coastal adaptation maintenance and monitoring techniques. Trained staff are represented by an equal representation of men and women, including youth, and persons living with disabilities. By the end of the programme at least four training packages receive positive evaluations in independent assessments. By the end of the programme at least four training packages receive positive evaluations in independent assessments. At least 5 knowledge materials (experience notes, case studies, photo stories, videos, etc.,) are generated per year starting from year 1 of the programme.	Site/field visits and surveys. Project reports Project monitoring and evaluation reports. Project monitoring and evaluation reports Independent evaluation reports Training evaluation reports Reports of State Governors.	Local capacity exists to produce training materials that are of a high standard. Strong island and community interest in, support for, and engagement in capacity building activities in the Outer Islands of each State. State Governors can identify the need for, and oversee implementation of interventions that address coastal adaptation in a pro-active, integrated and strategic manner. Strong island and community interest and support in the design and construction of soft coastal adaptation measures. State Governments of Yap, Chuuk and Pohnpei can oversee implementation of infrastructure projects that will enhance island and community resilience. Locally available printing, video and audio production that captures the successes and challenges of the project.

F. Demonstrate how the project aligns with the Results Framework of the Adaptation Fund

Table 15 Project Objectives and indicators relative to the AF RF Fund Outcomes and outcome indicators

PROJECT OBJECTIVE(S)[24]	PROJECT OBJECTIV INDICATOR(S)	FUND OUTCOME	FUND OUTCOME INDICATOR	GRANT AMOUNT (USD)
PO1. Prepare the necessary institutional and regulatory frameworks, policies, guidance and "tools" to help deliver a climate resilient FSM	Number of institutional, regulatory and planning policies, frameworks and tools introduced to implement climate resiliency for all FSM States	Outcome 7. Improved policies and regulations that promote and enforce resilience measures	7.1. No., type, and sector of policies introduced or adjusted to address climate change risks 7.2. No. or targeted development strategies with incorporated climate change priorities enforced	300,000
PO2. Mainstream climate resiliency and long term coastal planning into State wide development plans.	Number of communities with improved resilience through the mainstreaming of new climate-related planning and policy frameworks that are in place	Outcome 2 Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1 No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks	775,000
PO3. Provide communities with the necessary strategies and partnership plans and infrastructure to help relocate from high risk coastal inundation sites.	Number of strategies and plans developed, owned by communities with partner support Number of strategies actioned by community and supported by government and partners	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk-reduction process	3.2. Modification of behavior in targeted population	735,000
PO4. Capture and share the local knowledge produced on climate change adaptation and accelerate the understanding about the kinds of interventions that work in island environments in FSM	Number of knowledge products developed and are publicly accessible and widely disseminated	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk-reduction process	3.1 Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	345,000
PO5. Implement priority projects on Kosrae to help contribute towards the delivery of the Kosrae Strategic Development Plan and the Kosrae Shoreline Management Plan (SMP2014)	Number of risk-exposed coastal communities in Kosrae protected through adaptation measures	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	2,900,000

[24] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

PROJECT OBJECTIVE(S)[24]	PROJECT OBJECTIV INDICATOR(S)	FUND OUTCOME	FUND OUTCOME INDICATOR	GRANT AMOUNT (USD)
PO6. Introduce "transitional planning" livelihood security measures (including the integration of marine management with soft coastal engineering techniques, climate resilient taro planting techniques and groundwater protection techniques) to help 6 outer atoll islands	Number of risk-exposed coastal communities in Yap, Pohnpei and Chuuk protected through adaptation measures.	Outcome 5: Increase ecosystem resilience in response to climate change and variability –induced stresses	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress 5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	2,750,000
			TOTAL	

Table 16 Project Outcome and indicators in relation to the AF RF Fund Output and Output Indicators

PROJECT OUTCOME[25]	PROJECT OUTCOME INDICATOR(S)	FUND OUTPUT	FUND OUTPUT INDICATOR	GRANT AMOUNT (USD)
1.0 Improved capacity for efficient and effective support at national level to deliver climate resilient policies and enforce regulations for the coastal zone.	Number of national policies and related instruments developed and improved Number of State Government staff with job descriptions that make reference to climate and coastal risk management and who have received relevant training.	Output 7: Improved integration of climate-resilience strategies into country development plans	7.1. No., type, and sector of policies introduced or adjusted to address climate change risks	1,075,000

[25] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

PROJECT OUTCOME[25]	PROJECT OUTCOME INDICATOR(S)	FUND OUTPUT	FUND OUTPUT INDICATOR	GRANT AMOUNT (USD)
2.0 Improved resilience of Yap, Chuuk, and Pohnpei coastal communities to climate change	Ad-hoc soft engineering" projects are carried out in other islands. Programs carried out by various stakeholders (government, private sectors, and academic institutions) in the Outer Islands are not consolidated and implemented under island development plans that exist. Community DRR and CCA plans do not exist in the outer islands or are outdated and are not implemented	Output 5: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	2,750,000
3.0 Increased resilience of Kosrae coastal communities to climate change	Km of coastline with climate resilient shoreline protection or inland road reconstruction measures introduced on Kosrae. Km of inner road developed to climate resilient standards Community perception is positive for minimal impact of road on environment A relocation strategy is developed through the period of the project, collaborated by the community, government, NGOs, private sectors and development partners	Output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	2,900,000

PROJECT OUTCOME[25]	PROJECT OUTCOME INDICATOR(S)	FUND OUTPUT	FUND OUTPUT INDICATOR	GRANT AMOUNT (USD)
4.0 Capacity and knowledge enhanced and developed to improve management of coastal zones to adapt to climate change	An overarching knowledge management and capacity develop plan developed, disseminated and accessed. Percentage of beneficiaries trained in soft coastal engineering measures (construction, monitoring, etc.) Number of knowledge products (training materials, etc.) generated on lessons learned and best practices. Percentage of beneficiaries that understand and comply with natural resource control and management measures	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1 No. and type of risk reduction actions or strategies introduced at local level	1,080,000
			TOTAL	**$7,805,000**

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Table 17 outlines the detailed budget of the project. The key activities of each output are listed in Appendix H – on the Gantt Chart. Budgeting of these activities will be indicative but would, however, be within the maximum indicative budget allocation of each of its outputs as listed in Table 17 below. Table 18 outlines the FSM project execution costs. The budget notes are provided in Table 19.

Table 17 Details of the project budget

DETAILED PROJECT BUDGET		
No.	**Outputs**	**Cost Est USD**
Component 1. Strengthening institutional capacity for coastal zone management		
1.1	Output 1.1 Legislation and policy paper to guide regulation of climate resilient coastal and marine management for each FSM State	150,000
1.2	Output 1.2 Approved Shoreline Management Plans (SMPs) for Yap, Chuuk and Pohnpei States	600,000
1.3	Output 1.3 Coastal Development and Environmental Policy Guidelines developed for each State	150,000
1.4	Output 1.4 Establish climate resilient engineering and construction (building) standards and protocols for future coastal infrastructure construction within each FSM State	175,000
SUBTOTAL FOR COMPONENT 1		**1,075,000**
Component 2. Integrated approaches for Coastal Zone Protection for Yap, Chuuk, and Pohnpei		
2.1	Output 2.1 Six integrated soft coastal adaptation interventions completed on 6 atoll islands in Yap, Chuuk and Pohnpei.	2,750,000
SUBTOTAL FOR COMPONENT 2		**2,750,000**
Component 3. Kosrae Shoreline Management Plan priority intervention measures		
3.1	Output 3.1 Intervention A: New road section construction (Malem to Yeseng) plus access routes to the two villages.	2,150,000
3.2	Output 3.2 Intervention B: Transitional coast protection schemes at Mosral and Pal	750,000
SUBTOTAL FOR COMPONENT 3		**2,900,000**
Component 4. Knowledge management and capacity development for improved understanding on climate change impacts on the coastal zones and enhanced involvement of stakeholders		

DETAILED PROJECT BUDGET		
4.1	Output 4.1 Knowledge management plan covering all FSM beneficiaries to improve awareness levels and facilitate informed decision making to address risks to coastal zones and environment	110,000
4.2	Output 4.2 Knowledge products for national use for all coastal communities pooled in and tailored to local contexts	345,000
4.3	Output 4.3 Local and National Level Workshops, Learning & Trainings	110,000
SUBTOTAL FOR COMPONENT 4		**1,080,000**
PROJECT MANAGEMENT COSTS		
Project Staff costs		248,000
Office Support Rent (OEEM / KIRMA units)		18,500
Equipment, supplies, miscellaneous		17,500
Transportation		48,000
Monitoring and evaluation		167,175
SUB TOTAL		**499,175**
Implementing Entity Management fee (8.5% of Total Project Cost)		**663,425**
TOTAL PROJECT COST		**$8,967,600**

Table 18 Total FSM Executive Agency Staff Costs.

DESCRIPTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL (US$)
Project Coordinator Salary (Kosrae Based)	18,000	18,000	18,000	18,000	**72,000**
Project Admin/Finance Officer	16,000	16,000	16,000	16,000	**64,000**
Project Procurement Office salary	16,000	16,000	16,000	16,000	**64,000**
Field coordinators part time salary (Yap)	4,000	4,000	4,000	4,000	**16,000**
Field coordinators part time salary (Pohnpei)	4,000	4,000	4,000	4,000	**16,000**
Field coordinators part time salary (Chuuk)	4,000	4,000	4,000	4,000	**16,000**
TOTAL	**62,000**	**62,000**	**62,000**	**62,000**	**248,000**

Table 19 budget notes

BUDGET NOTE NUMBER	SUPPORTING NOTE EXPLANATIONS
A	Local Consultant are based on monthly rates and be calculated per local expert for each agreed Outcome (see Table 18).
B	Local Travel shall be estimated based on fuel/flight/car/transport costs for local and international staff around FSM (estimates per outcome using current local transport costs (2014).
C	International Consultants - (see breakdown in Table 19 below for monthly rates and calculated inputs per international expert for each Outcome)
D	International Travel estimated based on airline transport costs for local and international staff to travel to FSM or from FSM on project business (economy class fares only) based on 2014 airfare rates (average USD1, 000 /passenger/air fare).
E	Contract. Services (survey/engineering design and construction etc.). Including services for staff training on engineering monitoring and design (etc.) equipment; Expert studies to advisory support group.
F	Office Supplies - estimate for office equipment as required (Pohnpei and in State offices).
G	Project Equipment - Printing of awareness raising and training tools, Project Vehicles (e.g.: USD5,000 / motorcycle)
H	Miscellaneous / contingency - (1) Contingency is higher than other Outcomes as this represents international best practice with respect to engineering bill of quantity estimations. Full time Secretary at USD10, 000/year if required. Vehicle for Project Manager, maintenance of vehicles + fuel; production of communication material etc.
I	Implementing Entity Fee will be utilised by SPREP to cover its indirect costs in the provision of general management support and specialised technical support services. See Table 20 below.

Table 20 Local Consultants

Local Consultants	P*	(mo.)*	Monthly Rate	Proposed Budget	Component 1		Component 2		Component 3		Component 4	
Coastal & Livelihoods Management Expert (12mm)	1	12	6,500.00	78,000.00	10%	7,800.00	40%	31,200.00	20%	15,600.00	30%	23,400.00
Policy and Institutional Expert (8mm)	1	8	6,500.00	52,000.00	70%	36,400.00	0%	-	0%	-	30%	15,600.00
Gender Specialist(8mm)	1	8	6,500.00	52,000.00	5%	2,600.00	20%	10,400.00	20%	10,400.00	55%	28,600.00

State Community Liaison Advisors (4) for each state. 24 month period each	4	24	5,000.00	480,000.00	0%	-	60%	288,000.00	30%	144,000.00	10%	48,000.00
TOTALS				662,000		46,800.00		329,600.00		170,000.00		115,600.00

P* - positions. (mo.)* – duration in months

Table 21 International consultants

International Consultants	p*	(mo.)*	Monthly RATE (US$)	Proposed Budget (US$)	Component 1		Component 2		Component 3		Component 4	
Climate Change Adaptation Expert (18mm)	1	18	13,000	234,000	20%	46,800.00	30%	70,200.00	30%	70,200.00	20%	46,800.00
Coastal Engineering Expert (18mm)	1	18	15,000	180,000	20%	36,000.00	20%	36,000.00	45%	81,000.00	15%	27,000.00
Coastal Zone Planner/land Use Zoning Expert (12mm);	1	12	15,000	180,000	10%	18,000.00	25%	45,000.00	25%	45,000.00	40%	72,000.00
Monitoring and Evaluation Expert (12mm);	1	12	13,000	156,000	10%	15,600.00	20%	31,200.00	20%	31,200.00	50%	78,000.00
TOTALS				750,000		116,400		182,400		227,400		223,800

P* - positions. (mo.)* – duration in months

Project Implementing Entity Fee Use

The project management fee (8.5% of the total budget) will be utilized by SPREP, the Regional Implementing Entity, to cover the costs associated with the provision of general management support. Table 22 below provides a breakdown of the estimated costs of providing these services

Table 22: Breakdown of costs for the project IE fee

	Description	Amount (US$)
1	Financial Management	**200,000**
2	Information, Reporting, KM	**200,000**
3	Performance Management - Progress & Field Monitoring	**145,000**
4	Program Support - Technical and management to OEEM / KIRMA	**118,425**
	TOTAL	**663,425**

RIE Budget Notes:

1. Finance, Procurement and Administration

This covers general financial oversight, management and quality control by the SPREP Finance & Administration Division to:

- Manage, monitor and track AF funding including allocating and monitoring expenditure based on agreed work plans, financial reporting to the AFB and the return of unspent funds to AF;
- Ensuring that financial management practices comply with AF requirements and support audits as required;
- Ensuring financial reporting complies with SPREP and AF standards;
- Ensure cost efficient procurement processes and compliance with Government procurement rules, SPREP Procurement manual rules and guidelines and provide support and advice to EE in this direction;
- Manage financial audits of the project and ensure it is carried out on a timely basis (annual), advice and develop TORs, execute, manage and address audit requirement and issues – in line with SPREP Audit policy and guidelines;
- Manage and assist in overall evaluation activities of the project (Mid-term evaluation, terminal evaluation, AF evaluation requests) that include developing TORs, procure and effectively and efficiently communicate, address and close evaluation process; and
- Backstop financial requests of the project, troubleshooting, and support evaluation missions as necessary

2. Information, Reporting, Knowledge Management

SPREPs unique role in information management systems in the region will support the project in enhancing and maintaining its information management systems and specific project management databases to track and monitor project implementation. This role is carried out by

the SPREP Climate Change Division Pacific Climate Change Portal Team, the SPREP Information and Resource Center team with development support from the Communications and Outreach, Information Technology sections of the SPREP Corporate Services. The support includes:

- Strengthening the FSM platform for knowledge dissemination for the learnings out of project;
- Periodic Reporting to the AFB on the physical progress and AF result framework;
- Communicating updated information database to FSM and partners online;
- Information technology support and training on data collection and data monitoring;
- Support through media and communications training; and
- Back stopping support on national broadcasting in climate and disaster resilience platforms

3. Performance Management - Progress & Field Monitoring

The services of the SPREP project implementing team lead by climate change division will ensure the following:

- Provide oversight of the monitoring and evaluation function of the Executing Entity;
- Carry out field monitoring at six monthly interval and progress reporting;
- Provide advisory support on AF reporting requirements;
- Manage the relationship with the AF and ensuring consistency of outputs and outcomes with AF expectations; and
- Respond to information requests of the project at a regional level

4. Programme Support - Technical and Management Support to EE

- Providing technical support in the areas of risk management;
- Policy, programming, and implementation support services;
- Provide advice on development of performance measurement processes;
- Provide back stopping technical support on methodologies, TOR validation, results validation, and quality assurance.
- Support in seeking identification of experts through the existing Regional Technical Support Mechanism (RTSM) of the Council of Regional Organizations of the Pacific (CROP), ensuring utilization of Regional Response Funds of the RTSM where applicable; Backstop technical requests of the project, troubleshooting, and support evaluation missions as necessary; and
- Support on technical issues in management and project implementation

H. Include a disbursement schedule with time-bound milestones.

Table 23 below presents the proposed disbursement matrix for the project. The funds disbursements schedules closely follow the initiation of activities as per the Gantt chart provided in Appendix H. The funds required upon agreement for example will initiate the inception workshops of the project, initiate assessments, develop the knowledge management and capacity development strategy and plan of the project and carry out required trainings. For example, monitoring and evaluation trainings on the strategic results framework (log frame) that would be refined following inception workshops. Technical meetings and terms of references for all activities will be developed earlier before actual procurement can commence in into the first 12 months after the project initiation. Implementation on the ground is expected to start in the second year of the project and would be well underway by the third year. Monitoring and evaluation and capturing of lessons and practices with setting up of the project for closure and terminal evaluation would be the focus of the last eighteen months of the project.

The matrix and clear time-bound milestones will be refined during the inception phase of the project.

Table 23 Project Disbursement Matrix

	UPON AGREEMENT SIGNATURE	12 MONTHS AFTER PROJECT START	YEAR 2	YEAR 3	YEAR 4	TOTAL USD $
Scheduled Date	May-16	May-17	May-18	May-19	Jun-20	
Project Funds	**862,085**	**2,076,335**	**2,526,335**	**2,073,085**	**766,335**	**8,304,175**
Implementing Entity Fee	**64,791**	**168,003**	**206,253**	**167,726**	**56,653**	**663,425**
Total	**926,876**	**2,244,338**	**2,732,588**	**2,240,811**	**822,988**	**8,967,600**

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

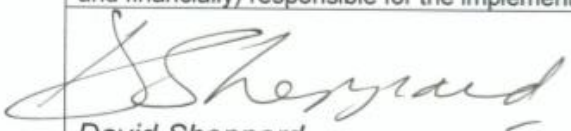
A. Record of endorsement on behalf of the government[24]

Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an Appendix to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

Lorin. S. Robert Secretary Department of Foreign Affairs, FSM	Date: 14 August 2014

B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans, the 2004 National Strategic Development Plan, 2013 National Policy on Disaster Risk Management Plan and Climate Change Adaptation, 2011 Kosrae State Climate Change Act, 2014 Kosrae Shoreline Management Plan and other relevant regulations, and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
 *David Sheppard,* Implementing Entity Coordinator	
Date: *August 4, 2015*	Tel. and email:+685 21929; davids@sprep.org
Project Contact Person: Espen Ronneberg	
Tel. And Email: +685 21929 espenr@sprep.org	

[24] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

LIST OF APPENDICES

Contents

Appendix A: Stakeholders Consulted and Support Letters

Key stakeholders initially consulted individually in FSM: December 2013.

NB: the findings of the consultation process are presented and embedded within the main Concept AF proposal.

Name	Ministry/Organization	State
Lyndon Jackson	State Governor	Kosrae
Simpson Abraham	PACC Coordinator	Kosrae
Emily Gibson	KIRMA (environmental regulations officer)	Kosrae
Lt. Anthony Tareg	Lt. State Governor	Yap
Ted Rutun	Vice Speaker, Eighth Legislature of Yap State	Yap
James Sarmog	Chief, Dept of Public Works	Yap
Christina Fillmed	Environmental Protection Agency	Yap
Johnson Elimo	State Governor	Chuuk
Ismael Mikel/Brad Mori	Chuuk EPA	Chuuk
Marcelo Peterson	Lt State Governor	Pohnpei
Pasha Carruthers	SPC Climate Change Advisor	Pohnpei
Gerald Zackios	SPC Director	Pohnpei
Andrew Yatilman	Office of Environment and Emergency Management	Pohnpei
Henry Susaia	EPA Pohnpei Office	Pohnpei
Willie Kostka	Micronesian Conservation Trust	Pohnpei
Lorin Robert Shanty Asher	Secretary and deputy Assistant Secretary Dept of Foreign Affairs (National Govt FSM)	National Government of FSM

MALEM MUNICIPAL GOVERNMENT
OFFICE OF THE MAYOR
P.O. BOX 339
TOFOL, KOSRAE FM 96944
FEDERATED STATES OF MICRONESIA

TELEPHONE 691 370 4501

July 06, 2015

General Endorsement from Mayor Jonas and Council Chairman Elesha.

It gives us great pleasure to communicate our full support and endorsement of the propose climate adaptation project now considered under the Climate Adaptation Fund.

We acknowledge and support the adaptation measure identified in the Kosrae State Shoreline Management Plan. We have lived in Malem our whole lives and have experienced the effects of rising sea level eroding our beach fronts, increased of rain fall with yearly inundation of our farm lands, inundation of certain road sections, especially at Paal and Mosral, and from damages these events brought to our homes and properties. Also a need to upgrade the existing road from Malem to Yeseng is a priority to relocate their settlements and infrastructure during the extreme climate events.

Responding to the unaddressed questions and issues arising out of the project proposal, representatives of the community have gathered tonight during our community consultation meeting to discuss these issues and provide their individual perspectives. This community consultation meeting witness the presents of the woman, person with disabilities, youth, senior citizens groups, community leaders , land owners and other stakeholders.

We recognize and take note of the full support and enthusiasm shown by the participants during the consultation. It is our objective that this message provide further evidence of our official support to the position taken by the community as represented by the parties mentioned above.

Grant Jonas
Mayor

Likiaksa Elesha
Council Chairman

List of landowners: in support of the project

H.O. Augustus. Tava

65M02 - Constantin S

65 M01 H.O ENOCK

92 M01 - H.O Mavas Tosic

92 M02 - H.O ENOCK

92 M03 - Serena Tabius

92 M04 - H.O Sepe A Ed

92 M05 - Lidio Sirum

65M08 - H.O Palokou PH

92M06 - Camrun. Sirum

66M01 - H.O NEMIA

66 M02 - SKINNER. Talley

66 M03 - Lydia. C

66 M05 - H.O ASAMA & H.O SAPAL

66 M04 - H.O SALIK Atty

67M01 - Cypo Atty

67M02 - H.O GIPOON Palokoy

67 M03 - H.O Tolensa. Langu

67 M04 - H.O SHREW. Jonas

67 M05 - H.O Austin. Jonas

68 M01 - H.O LIKIAK J. Langu

68 M02 - Palikkun. SHREW

68 M03 - H.O Joseph. Olter

68 M07 - Bardon. Muskokuk

68 M011 - Takosy SHREW

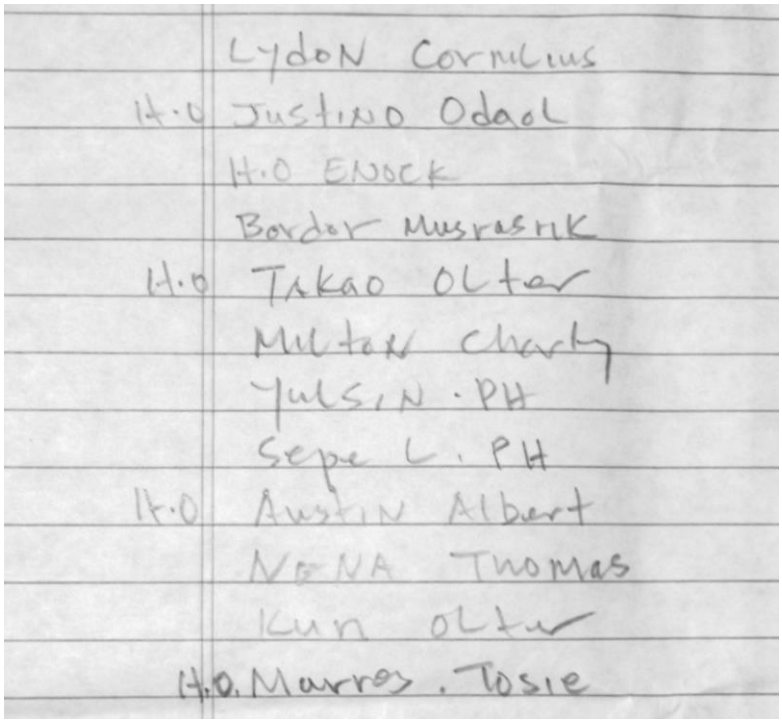
69 M001 - Emiot. Wakuk

69. M02 - Edison. Charly

69 M03 - H.O Lulu

69 M04 - H.O GIDEON. Pilokon
69 M07 - Tulenkun Tulenkun
69. M010 - Augustus. Tova
69 M 11 - H.O TOSIVO NAKAMURA
69 M 12 - Tedrick M
70 M01 - H.O LINUS. George
70M02 - H.O Cornelius
70 M03 - H.O Kun Axson
70 M04 - Boyd . Aaron
70M05 - H.O NENA George
70 M0 -10- H.O Gideon Pal
70 M -03 - H.O Frank CONNO
71 M-01 - H.O. Linus George
71 M-02 - H.O. INOCK.
71 M003 - JACOB N
71 M105 - REMOS. L
71 M06 - NOAH. TALLY
71 M07 - H.O Palickun George
09 U02 - EMIUS. NENA
34 U04 - EMIUS. NENA

H.O. Gideon
Esau S. Esau
H.C. Linter Tolenna
H.C. Kun Lomao
Rincan J. Phillip
Takumi George
Mason M. Timothy
Gifford S Jones
H.C. Luther Cornelius
H.O. Solik Cornelius
H.O. Clain George
H.O. Paliklem George
Limberg Talley
H.C. Lambert Talley
HO Harrison George
Barton Musrasrik
H.C. Swinton & Holden Jack
H.O. Palsisa Talley
HO. Roland George


Lydon Cornelius
H.O Justino Odaol
H.O Enock
Border Musrasrik
H.O Takao Oltar
Multar charly
Julsin . PH
Sepe L . PH
H.O Austin Albert
Nena Thomas
Kun Oltar
H.O. Marros . Tosie

GOVERNMENT OF KOSRAE
Office of the Governor
Post Office Box 158
Kosrae, Federated States of Micronesia 96944
Telephone: 691-370-3002/3003..Facsimile: 691-370-3162

Tuesday, July 07, 2015

David Sheppard
Director General
SPREP

Attention: Peniamina D Leavai
Adaptation Specialist
SPREP

RE: SPREP Mission to FSM and request for consideration of requirement for Government support to the Adaptation Fund (AF) Proposal - in response to Clarification Requests (CRs) of the AF Secretariat

Thank you for your letter dated 6 July 2015. It was my pleasure to welcome you to the State of Kosrae and to our island. The mission objectives and our consultation meeting with government officials yesterday was very fruitful on this matter. Thank you for sharing the terms of reference of your mission with Mr Abraham Simpson - the SPREP Desk Officer based in Pohnpei..

I wish to inform you that in my capacity as the Chairman of IPIC, given the urgency of the matter, including the urgency of the content of the matter - being immediate and urgent adaptation responses to the adverse impacts of climate change now affecting our island and State, I hereby endorse and acknowledge the recommended action.

As discussed, this matter will be discussed further with the IPIC in our upcoming meeting planned for 15 July 2015. We greatly appreciate your attendance or a representative from SPREP in this meeting. This will pave way for further strengthening the IPIC list including its strategic plans vis-à-vis the Kosrae Shoreline Management Plan 2014.

On behalf of IPIC, I thank you for the opportunity to engage on these key and priority development projects for the State of Kosrae.

With kind regards,

Carson K Sigrah
Lt. Governor / Chairman of IPIC

GOVERNMENT OF KOSRAE
Office of the Governor
Post Office Box 158
Kosrae, Federated States of Micronesia 96944
Telephone: 691-370-3002/3003..Facsimile: 691-370-3162

July 15, 2014

Mr. David Sheppard
Director General
Secretariat of the Pacific Regional Environment Programme
P.O Box 240
Apia, Samoa

Subject: **Endorsement for "Enhancing the resilience vulnerable island atoll Communities in FSM to climate change risks through a "Living with the Sea" National Risk Management Framework" Project Proposal**

Dear Director Sheppard,

It is indeed my pleasure to convey herein, on behalf of the people of the state of Kosrae, our utmost appreciation of the efforts undertaken to date with regards to the application for Adaptation Fund support. This letter therefore reflects our full support towards submitting this proposal and we look forward to a positive outcome that shall help us address future climate resilience for our State and the coastal communities of our Outer Islands. The State of Kosrae is prone and vulnerable to the impacts of climate change, hence this proposal is beneficial to increase community resilience, improve coastal planning and to help us introduce cost effective adaptation options for our people.

This project is essential to help us to inform and communicate to our coastal communities in Kosrae hence, the most appropriate planning and engineering solutions available to us to address livelihood security for all. It also shall be valuable for us to introduce, where possible, ecosystem based adaptation approaches in an attempt to reduce community vulnerability to sea-level rise impacts.

I as the Governor of the State of Kosrae confirm that the proposed "Living with the Sea" National Risk Management Framework" would be in accordance with our own State wide priorities towards implementing adaptation activities to reduce the predicted adverse impacts and risks that are posed by climate change.

Sincerely,

Lyndon H. Jackson
Governor
Kosrae State

Cc: Dr. Netatua Pelesiko Director, Climate Change Division

OFFICE OF THE GOVERNOR
STATE OF CHUUK
Federated States of Micronesia

Johnson S. Elimo
Governor

Manas J. Akapito
Lt. Governor

Mr. David Sheppard
Director General
Secretariat of the Pacific Regional Environment Programme
P.O Box 240
Apia, Samoa

Subject: Endorsement for "Enhancing the resilience vulnerable island atoll Communities in FSM to climate change risks through a "Living with the Sea" National Risk Management Framework" Project Proposal

Dear Director Sheppard,

It is indeed my pleasure to convey herein, on behalf of the people of the state of Chuuk, our utmost appreciation of the efforts undertaken to date with regards to the application for Adaptation Fund support. This letter therefore reflects our full support towards submitting this proposal and we look forward to a positive outcome that shall help us address future climate resilience for our State and the coastal communities of our Outer Islands. The State of Chuuk is prone and vulnerable to the impacts of climate change, hence this proposal is beneficial to increase community resilience, improve coastal planning and to help us introduce cost effective adaptation options for our people.

This project is essential to help us to inform and communicate to our coastal communities in Chuuk (and outer islands) the most appropriate planning and engineering solutions available to us to address livelihood security for all. It also shall be valuable for us to introduce, where possible, ecosystem based adaptation approaches in an attempt to reduce community vulnerability to sea-level rise impacts.

I as the Governor of the State of Chuuk confirm that the proposed "Living with the Sea" National Risk Management Framework" would be in accordance with our own State wide priorities towards implementing adaptation activities to reduce the predicted adverse impacts and risks that are posed by climate change.

Sincerely,

7/11/14

Johnson Elimo
Governor
Chuuk State

Cc: Dr. Netatua Pelesiko — Director, Climate Change Division
Mr. Simpson Abraham — FSM PACC Coordinator
Mr. Andrew Yatilman — Director, OEEM

P.O. Box 189 Weno, Chuuk State, FM 96942 Tel: (691) 330-2234/2231 Fax: (691) 330-2234

THE LIEUTENANT GOVERNOR
STATE OF YAP

August 15th 2014

Dr. David Sheppard
Director General
Secretariat of the Pacific Regional Environment Programme
P.O Box 240
Apia, Samoa

Subject: Endorsement for "Enhancing the resilience vulnerable island atoll communities in FSM to climate change risks through a "Living with the Sea" National Risk Management Framework" Project Proposal

Dear Director Sheppard,

It is indeed my pleasure to convey herein, on behalf of the people of the state of Yap, our utmost appreciation of the efforts undertaken to date with regards to the application for Adaptation Fund support. This letter therefore reflects our full support towards submitting this proposal and we look forward to a positive outcome that shall help us address future climate resilience for our State and the coastal communities of our Outer Islands. Yap is prone and vulnerable to the impacts of climate change, hence this proposal is beneficial to increase community resilience, improve coastal planning and to help us introduce cost effective adaptation options for our people.

This project is essential to help us to inform and communicate to our coastal communities in Yap (and outer islands) the most appropriate planning and engineering solutions available to us to address livelihood security for all. It also shall be valuable for us to introduce, where possible, ecosystem based adaptation approaches in an attempt to reduce community vulnerability to sea-level rise impacts.

I as the Governor of the State of Yap confirm that the proposed "Living with the Sea" National Risk Management Framework" would be in accordance with our own State wide priorities towards implementing adaptation activities to reduce the predicted adverse impacts and risks that are posed by climate change.

Sincerely,

for Sebastian Anafel
Governor

Cc: Dr. Netatua Pelesiko — Director, Climate Change Division
Mr. Simpson Abraham — FSM PACC Coordinator
Mr. Andrew Yatilman — Director, OEEM

Colonia, Yap FM 96943
Telephone: (691) 350-2108/09 Fax: (691) 350-4113
E Mail: govyap@mail.fm

OFFICE OF THE GOVERNOR

STATE OF POHNPEI
KOLONIA, POHNPEI FM 96941
TEL:(691) 320-2235/2204 FAX:(691) 320-2505

July 23, 2014

Mr. David Sheppard
Director General
Secretariat of the Pacific Regional Environment Programme
P.O Box 240
Apia, Samoa

Subject: Endorsement for "Enhancing the resilience vulnerable island atoll Communities in FSM to climate change risks through a "Living with the Sea" National Risk Management Framework" Project Proposal

Dear Director Sheppard,

It is indeed my pleasure to convey herein, on behalf of the people of the state of Pohnpei, our utmost appreciation of the efforts undertaken to date with regards to the application for Adaptation Fund support. This letter therefore reflects our full support towards submitting this proposal and we look forward to a positive outcome that shall help us address future climate resilience for our State and the coastal communities of our Outer Islands. Pohnpei is prone and vulnerable to the impacts of climate change, hence this proposal is beneficial to increase community resilience, improve coastal planning and to help us introduce cost effective adaptation options for our people.

This project is essential to help us to inform and communicate to our coastal communities in Pohnpei (and outer islands) the most appropriate planning and engineering solutions available to us to address livelihood security for all. It also shall be valuable for us to introduce, where possible, ecosystem based adaptation approaches in an attempt to reduce community vulnerability to sea-level rise impacts.

I as the Lt. Governor of the State of Pohnpei confirm that the proposed "Living with the Sea" National Risk Management Framework" would be in accordance with our own State wide priorities towards implementing adaptation activities to reduce the predicted adverse impacts and risks that are posed by climate change.

Sincerely,

Marcelo K. Peterson
Lt. Governor

Cc: Dr. Netatua Pelesiko — Director, Climate Change Division
Mr. Simpson Abraham — FSM PACC Coordinator
Mr. Andrew Yatilman — Director, OEEM

Appendix B: Structure and Purpose of each FSM State Shoreline Management Plan (SMP)

B1: The Aim of each SMP

A Shoreline Management Plan (SMP) is proposed for each FSM State. Each SMP shall cover all relevant geological island types together in an integrated manner of that State. Each SMP shall represent important Key Performance Indicator (KPI).

Each SMP shall relate and abide to the SDP 2004-2023, the existing national climate change policy 2009; the 2013 Policy on Disaster Risk Management and Climate Change Adaptation; the Multi-State Hazard Mitigation Plan 2005 and other relevant key documents in place (such as the Kosrae Strategic Development Plan 2013-2014). They should provide vision and "signposts" to practical tools with which each State Government can implement the programme efficiently and effectively.

The aim of each State SMP is to help the State Government to show a transparent process towards setting priority intervention measures that are auditable and based on sound and sustainable engineering best practice. They are also the key communication tool for State Governments to convey coastal hazards and from this to improve coastal resilience for local communities by identifying clear actions and solutions. Not all the proposed solutions presented in each SMP may be actioned immediately, and so it is for this reason that each SMP shall present investment opportunities over a range of time periods (0-3yrs, 3-10 yrs, 10-20 years) which shall be updated on an annual basis to review, monitor and evaluate SMP recommendations being presented for long-term improvement in resilience of both infrastructure and communities.

Each SMP will:

1. Set priority intervention measures that are auditable and based on sound and sustainable engineering best practice;

2. Improve the coastal community's awareness (for each State) of coastal and watershed related hazard risks (through improved map production and clear presentation of risks to public);

3. Provide advice on techniques to reduce coastal hazard risks in coastal settlements (i.e: road relocation inland etc);

4. Provide "self-help" advice to community and infrastructure providers to better adapt, respond and recover from typhoon/storm events.

B2: Duration of each SMP

Each States SMP should be reviewed at five-yearly intervals (note: for Kosrae it was updated 13years after initial production). During the Plan period, the solutions implemented will be monitored by the State Governments designated authority organisation – KIRMA in the case of Kosrae) to ensure that they are effective in improving climate proofing and resilience. Some solutions are likely to take longer than five years to implement and the review will take the progress of these into account.

B3: Structure of each SMP
(NB: the following text is prepared for guidance, and does not reflect the structure of the Draft SMP for Kosrae recently produced).

Each SMP should consist of two parts each serving a separate and distinct purpose.
Part 1 - Plan Development, which describes the process undertaken in preparing the SMP in conjunction with representatives of the Communities involved and the State Government and other stakeholders with interests in the Plan area.

Part 2 - Implementation Guidelines, which describes the Plans and Actions recommended as outcomes of the process, together with the partner responsible for implementing these outcomes. The participants of the SMP preparation process are to be acknowledged in the ***Implementation Guidelines***. These Implementation Guidelines describe the solutions proposed that will increase the resilience of coastal settlements in each State and the ways these solutions can be implemented. The solutions shall be presented for each infrastructure aspect that is recorded as being of moderate to low resilience (i.e.: defence or "feature" residual life of <5 years).

The review of the ***Implementation Guidelines*** and the solutions proposed will be undertaken:

1. As part of the Five-yearly SMP review programme.

2. Once implemented, the solutions will be monitored on either an annual or five-yearly basis to check the effectiveness of the solution. Detailed implementation of the solution will then determine the monitoring requirements and hence enable Key Performance Indicators (KPIs) to be set for each State Government to deliver against.

The following outlines the basic structure of each SMP. It is recommended that a Procedural Guidance document is also produced at a national level that elaborates on the following and provides the actual expected requirements and details of each SMP (separate Technical Assistance exercise included in Component 1).

B4: Specific Aspects of each State Government SMP

Section 1 – Introduction

- Aim of the SMP
- Participants in the SMP production (including State Government, key departments contractors, land owners, community reps, NGOs etc)
- Process of preparing the SMP (consultation process etc)
- Review process of the SMP (by whom and when)

Section 2 – Description of the Shoreline Environment

- Description of the States coastal zone and shoreline, key features, hazard risks and identification / location of key settlements/features at risk;
- Baseline presentation / identification of resources present (economic, social and natural);
- Identification and description of significant infrastructure (location and scale);
- Description of the environment where the infrastructure is located;

Section 3 – Summary of States Coastal Community Resilience

- Identification and mapping of "hazard risk zones" to derive the risk to and resilience of the infrastructure and communities mentioned in Section 2.

Section 4 – Land and Resource Use Issues

- Identification of land uses/resources that are exacerbating or influencing sea or river hazard risk within the State (e.g.: areas of sand mining etc where erosion is occurring as a result and where the activity (or defence works) is increasing coastal hazard risks.

Section 5 – Appraisal and Option Selection

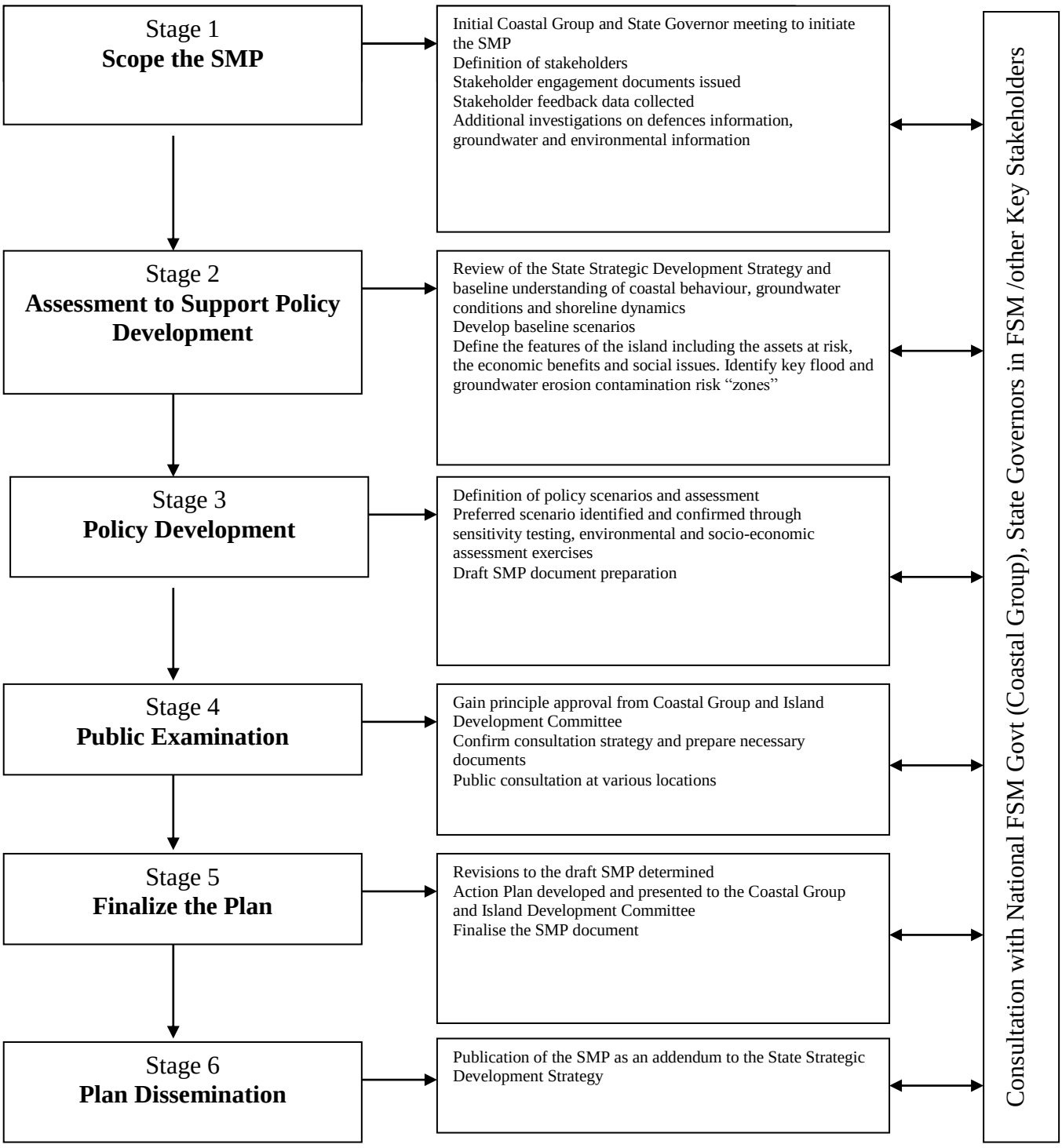
- Defences and Works Options –identify the defence works options over 3 timescales (0-3yrs, 3-10yrs and 10-20 years) including any recommendation to remove/relocate structures.

Section 6 – Programme

- Identify the defence works preferred programme over 3 timescales (0-3yrs, 3-10yrs and 10-20 years) including any recommendation to remove/relocate structures. Physical work plans can be included.
- Responsibilities – if required, identify who will be responsible for the implementation of the recommended defence plan of actions.

Section 7 – Review and Monitoring

Figure B1


Stage 1
Scope the SMP
Initial Coastal Group and State Governor meeting to initiate the SMP
Definition of stakeholders
Stakeholder engagement documents issued
Stakeholder feedback data collected
Additional investigations on defences information, groundwater and environmental information
Stage 2
Assessment to Support Policy Development
Review of the State Strategic Development Strategy and baseline understanding of coastal behaviour, groundwater conditions and shoreline dynamics
Develop baseline scenarios
Define the features of the island including the assets at risk, the economic benefits and social issues. Identify key flood and groundwater erosion contamination risk "zones"
Stage 3
Policy Development
Definition of policy scenarios and assessment
Preferred scenario identified and confirmed through sensitivity testing, environmental and socio-economic assessment exercises
Draft SMP document preparation
Stage 4
Public Examination
Gain principle approval from Coastal Group and Island Development Committee
Confirm consultation strategy and prepare necessary documents
Public consultation at various locations
Stage 5
Finalize the Plan
Revisions to the draft SMP determined
Action Plan developed and presented to the Coastal Group and Island Development Committee
Finalise the SMP document
Stage 6
Plan Dissemination
Publication of the SMP as an addendum to the State Strategic Development Strategy
Consultation with National FSM Govt (Coastal Group), State Governors in FSM /other Key Stakeholders

Appendix C: Terms of Reference – Climate Resilient Road Standards Project for FSM

Project Goal
Improve the climate resilience of road transport sector development in FSM

Project Outcome
To build the capacity of each FSM State to incorporate climate risk analysis into road transport infrastructure project identification, formulation and execution based on the latest climate change science and risk information tools available.

A. Activities / Outputs

Working within State Government structures for each State, the project team will:

1. Execute a review of the current **legal and institutional framework** for road construction in FSM (existing laws/codes, construction designs, policy/plans, and projects) and identify a regulatory avenue to incorporate climate change adaptation and disaster risk reduction measures as standard practice for future road construction. Lessons and examples from the PACC Kosrae project is encouraged.

2. Review the most up-to-date climate risk information and tools available in FSM and methodologies used in previous projects to formulate **a practical climate risk screening methodology for road transport infrastructure** in FSM, with respect to the following design parameters:

    a. Road pavement surface types (low volume, locally available materials), depth /elevation and construction standards

    b. Drainage structures / bio-engineering to control water flow (eg culverts, cross-road drainage, vegetated erosion control)

    c. Coastal protection measures (eg. levee banks, realignment)

    d. Bridge design (materials, clearance heights, protective embankments) / construction of fords

    e. Ongoing maintenance costs and scheduling

3. At the national level, utilize a practical climate risk screening methodology developed with key stakeholders to assess, identify and map **priority risk areas** of the national road infrastructure network at a State scale, in relation to both current and future climate for 2030 and 2055 time periods. Worst case and most likely future climate scenarios will be examined for the following variables:

    - change in onset and intensity of seasonal rains;
    - changes in very hot days and heat waves;
    - expected accelerated sea level rise;
    - changes in intensity and frequency of precipitation events (extremes in particular) and associated flood patterns and risk of erosion;
    - changes in intensity and frequency of tidal wave surges (example, kind tides) and associated risks of inundation, loss and damage of assets and property
    - changes in cyclone intensity, frequency and duration, and associated wind speeds, storm surges and wave actions; and

Other factors contributing to road infrastructure vulnerability will be examined including slope stability, topography, hydrology, significant lagoon or wetland/river crossings etc

To the extent possible, develop a set of State wide climate risk profiles detailing expected changes in key variables most relevant for transport infrastructure design and planning (e.g. return periods for extreme rainfall intensity, maximum daily rainfall and maximum wind speeds).

4. **Identify up to eight target sites** across the four FSM States islands **and formulate a work plan** to undertake detailed site specific climate risk and adaptation assessments in line with the national FSM climate change policy and other donor investments. Target sites will be determined on the basis of the following criteria:

    - Climate and disaster hazard risks (from activity 3)
    - Available data
    - Ongoing / planned physical works in the area
    - Potential to scale up (ie focus on different design parameters / environmental factors)
    - Potential for community involvement in climate resilience activities, including bioengineering, the involvement of women's groups or ecosystem-based adaptation.

5. Undertake **detailed site-specific climate risk assessment and design adaptation measures** for planned road improvements at up to eight sites across four States using the best available science, cost-benefit considerations and community engagement techniques, drawing on local knowledge where possible. Specific costed climate resilient design recommendations (both engineering and non-engineering) will be made as compared to standard construction, for 2030 and 2055 design horizons considering incremental cost/benefits over the life of the asset, including construction, maintenance and repair costs. The following design parameters will be considered:

    - Road pavement surface types (low volume, locally available materials), depth /elevation and construction standards
    - Drainage structures / bio-engineering to control water flow (eg culverts, cross-road drainage, vegetated erosion control)
    - Coastal protection measures (eg. levee banks, realignment)
    - Bridge design (materials, clearance heights, protective embankments) / construction of fords
    - Ongoing maintenance costs and scheduling with maximum community involvement where possible throughout the process

6. Present preliminary findings in a regional stakeholder workshop, to **share lessons learned** across selected partner countries to inform future sector wide adaptation strategies

7. Based on site specific assessment findings and identified risks at the national level, noting the differences between urban and rural roads, develop a **national road standards manual/guideline** that incorporates design guidelines for addressing climate risks in road project identification, formulation and execution (in relation to the aforementioned parameters), building on any standard engineering designs currently in use.

    a. Test manual on site in one of the target sites together with State specific staff incorporating feedback from stakeholders

b. Incorporate a decision support process to identify the level of risk, design and implementation of appropriate adaptation measures/minimum standards for climate resilient design, and cost-benefit estimates

8. **Develop the capacity and knowledge of State Government staff** in using and applying the climate resilient road standards and guidelines. The assigned support staff within each State working on the project should be exposed to on-the-job training and knowledge building

    a. Conduct at least three training seminars for each States staff during the project

9. Undertake **promotion and awareness raising** of the project outputs to both Government and non-Government stakeholders, including by demonstrating the guidelines and standards to staff at State Governmental Offices.

    a. Participate in a **national consultation** on the FSM national road standards manual

10. Prepare a **final technical report and summary for policy makers** with a recommendations on options for integrating the national road standards manual into relevant sub-sector plans or national legislation.

B. Key Deliverables

1. Climate Risk Screening methodology for road transport sector projects

- Documented methodology for application in future project feasibility studies

2. **Priority risk maps and sub-national climate profiles**

- A series of maps identifying high risk areas of the national road network for future climate in 2030 and 2055
- Sub-national climate risk profiles for expected changes in key climate variables

3. Detailed site specific climate risk and adaptation assessments completed for up to 8 selected sites

4. **Climate Resilient Road Standards and Construction Guidelines**

- A set of national climate resilient road standards and construction guidelines to ensure future road development addresses climate risks in project identification, planning and construction
- A technical document setting out a step-by-step process to apply minimum standards required for climate-resilient road design and construction, depending on the level of risk / geophysical features of a given project site and incremental cost benefits for specific adaptation measures over the life of the asset, specifying appropriate:
    i. Road pavement surface types;
    ii. Drainage standards, including potential for bio-engineering, ecosystem-based and community-based adaptation measures;
    iii. Coastal protection measures;
    iv. Bridge design (materials, clearance heights, protective embankments); and
    v. Ongoing maintenance and scheduling.

5. **A review of the legal and institutional framework for road sector development in FSM**

- **Policy recommendations** for regulatory/institutional reform for mainstreaming climate change adaptation and disaster risk reduction considerations into future road transport projects in FSM.

6. **Summary for Policy Makers**

- A knowledge product that can communicate to non technical users, the results of the project.

- The document should be short (20 pages), glossy, easy to read, with a synopsis of the practical tools, methods, and lessons learned for other governments/sectors to consider. For presentation at regional events

C. Required Expertise - Climate Resilient Road Standards Team

International Technical Assistance:

- Climate Risk Analysis Specialist / Team Leader (full time TA position up to 10 months)

  - Strong background in climate change and disaster risk analysis and at least 5 years experience in the application of environmental risk assessment on the design, operation and management of infrastructure projects

  - Relevant university degree and experience working in the Pacific / developing countries

  - Experience in team and project management in particular mentoring and capacity building in a diverse stakeholder environment

- Hydrologist (up to 3 person months)

  - Extensive experience in the identification, design and preparation of infrastructure projects, particularly in resource constrained environments

  - Relevant university degree

- Infrastructure economist (up to 2 person months)

  - Extensive experience in economic and financial analysis of infrastructure projects, least cost and cost-benefit analysis

  - Experience in developing prioritization methodology for future investments taking into account social, environmental and financial objectives including estimating whole-of-asset-life costs with climate change

- Legal specialist (up to 2 person months)

  - Extensive experience in policy and regulatory review, formulation and sector planning

  - Relevant work experience in Pacific island countries highly desirable

State Government support teams (existing line positions):

- 1 x Manager Projects (project counterpart)

- 1x Principal Engineer
- 1x Environment/Social Safeguards Officer
- 1 x Finance Officer

D. Responsibilities

- Climate Risk Analysis Specialist (Team Leader)

    - Establish contacts with key stakeholders within FSM and in close consultation develop a detailed work plan for the activity and roles and responsibilities of team members in coordination with individual State projects and operations managers.

    - Provide strategic oversight, direction and management of the project and deliverables, and act as key point of contact for all project stakeholders.

    - Lead development and execution of the following:

        - a practical climate risk screening methodology for road transport infrastructure in FSM based on a review of the most up-to-date climate risk information and tools available

        - climate risk mapping for the national road network

        - undertake site-specific climate risk and adaptation assessments for identified sites and formulate appropriate adaptation design measures

        - national climate resilient road construction guidelines

    - Ensure timely delivery of project reporting as per the TOR

- Hydrologist

    - Under the direction of the Team Leader, advise on high risk areas of the national road network from a hydrological perspective and assist in the development of sub-national climate risk profiles and collection of data

    - Liaise with national FSM Govt and State Govt agencies and work with local engineers on technical design for climate resilient road drainage, surface types, coastal protection and bridge design

- Infrastructure economist

    - Under the direction of the Team Leader, review current road transport sector policy and investment programs to determine the application of prioritization criteria for transport sector investments, and the extent to which the incremental costs of climate change are incorporated in investment planning

    - Assist the team leader calculate the cost/benefits of identified adaptation measures for various road infrastructure design parameters over the life of the asset (including construction, maintenance and repair costs).

    - Assist the Team Leader develop decision criteria for the selection and implementation of adaptation measures as part of the national guideline

- Legal Specialist

- Under the direction of the Team Leader, lead review of the legal and institutional framework for road construction in FSM including collection and analysis of existing laws/codes, construction designs, policy/plans, and projects relevant for the integration of climate change and disaster risk reduction provisions

- Draft a policy note for FSM decision makers recommending a regulatory avenue to incorporate climate resilient design standards for future road development

E. Work Plan / Timeline

Indicative time line only (assuming AF funds are secured by October 2015).

Month	December '15			January '16				February				March				April				May				Jun	Jul	Aug	Sep	Oct	Nov	Dec
Action	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**							
1 Prepare and sign SA				X																										
2 Recruit contractor																														
3 Mobilise technical team (quarterly report)												X																		
4 Review policy settings																														
5 Climate risk screening methodology																X														
6 Priority climate risk maps and profiles																			X											
7 Identify 6 test-sites and formulate workplan (6 monthly report)																							X							
8 Detailed site-specific assessments and quarterly report																										X				
9 Regional workshop share lessons learnt																														
10 Draft national road standards																											X			
11 National consultations																														
12 Final national road standards manual																												X		
13 Draft technical report and Summary																													X	
14 Final technical report and summary																														X

Project Milestones - **X**

Appendix D - Terms Of Reference: Consultancy For Formulation Of Coastal Development Guidelines Manual for the Federated States of Micronesia (FSM)

I. INTRODUCTION AND BACKGROUND

Micronesia is a developing country vulnerable to tropical storms, typhoons and drought, effects which are presently modulated by the El Nino Southern Oscillation. Future climate change is expected to increase the intensity and frequency of extreme rainfall events. Sea level is observed to be rising at 28-36mm/decade exacerbating coastal erosion and placing at risk human communities in coastal areas of atoll islands and islets.

Currently there are no written guidelines on how to build climate change resilience into coastal erosion control, land reclamation or harbour/wharf development. Environmental Impact Assessment (EIA) requirements are generic on this issue though in Kosrae, efforts are being made to "climate proof" EIA regulations and approaches.

The consultant will work closely with the State Government and other relevant agencies to address gaps in technical knowledge and know-how on how best to plan and develop wharves, conduct land reclamation, other major developments and manage coastal erosion in a changing climate without increasing vulnerability. Current coastal zone management practices will be reviewed to assess their implications for strengthening or reducing climate resilience.

Comprehensive technical guidelines on climate change resilient coastal protection, with separate chapters on climate change resilient coastal development, land reclamation and coastal erosion control will be produced and finalized through stakeholder consultations with relevant national, and island authorities and sector specialists.

II. OBJECTIVE

To formulate an FSM specific set of guidelines for climate risk resilient coastal protection planning through a participatory approach and with recommended amendments to existing Land Use Planning and Environmental Impact Assessment (EIA) regulations of each FSM State, National Building Code, the Climate Change national policy as necessary to better address climate change adaptation and to provide pragmatic evidence based advocacy for high level political endorsement for the coastal protection guidelines document.

III. SCOPE OF WORK

- Source, define and obtain agreement for the development targets to be achieved with respect to climate change resilience and risk mitigation and the climate change risk scenarios to be considered in the coastal protection guideline document.
- Assess past and current development practices and coastal protection measures in FSM (per State) that have had negative impacts such as reduced natural resilience of the islands and increased vulnerability of the islands to climate change risks.
- Review the existing coastal development planning process, engineering designs and, construction implementation and monitoring processes and practices for high, medium and low impact coastal developments from a climate risk planning perspective. These include land reclamation, wharf/harbour development, erosion prevention and other coastal protection measures.

- Review the existing FSM EIA process (per State) and other policy and legal frameworks to determine possible regulatory improvements to implementing coastal development planning approaches.
- Formulate objectively verifiable, quantitative standards for coastal land use with respect to coastal development including safe setbacks, land reclamation, infrastructure etc. For example setting a minimum elevation with respect to the high wave energy zone.
- Provide an objective quantitative performance monitoring and evaluation framework for monitoring delivery of the proposed standards.
- Carry out stakeholder consultations to gather information and views on proposed guideline content.
- Prepare formal guideline document on climate risk resilient coastal protection and adaptation measures.
- Conduct high level stakeholder meeting to present and endorse the Guidelines for Climate Risk Resilient Coastal Protection in each FSM State.

IV. **INDICATIVE TASKS**

The consultant's work will include but not be limited to the following:

- Identify stakeholders and island communities most relevant for understanding, discussing and evaluating the situation with respect to integrating climate change risks into resilient island planning.
- Conduct field visits to discuss and analyse situation with respect to coastal protection, harbour development, land reclamation, flood and drainage control from the perspective of integrating climate change risks. Field visits will include visits to all 4 States (to be determined by the client). Travel costs (internal) will be borne by the client.
- Specify climate change resilience and risk assumptions requiring guidance support and seek agreement.
- Review of coastal protection and foreshore ownership issues in FSM.
- Review existing land use planning regulation, EIA regulation, EIA processes, land use planning regulations and any other building codes or guidelines to relate to climate change risks and adaptation planning perspectives.
- Review of reports from PACC, eg:cost benefit analysis and vulnerability assessments of key States visited.
- Identify existing land use practices that reduce natural resilience of the islands and increase vulnerabilities to climate change risks.
- Review, assess and analyze various coastal protection measures and practices including conventional adaptation, soft adaptation and traditional measures.
- Review and assess the costs and benefits of different options for reducing vulnerability of current and future climate change risks through land use planning measures such as maintaining and restoring natural buffers (e.g. coastal ridges, beach rock, coastal vegetation) and critical infrastructure based on projected patterns of flooding and beach and coastal erosion.
- Prepare a summary of findings and recommendations on the issues, identifying weaknesses and
- malpractices and social and economic costs and benefits associated with old and new coastal development and protection practices.
- Provide necessary amendments to the Land Use Planning Regulation by defining the environmental protection zone in the context of climate risk resilience in each FSM State.
- Provide guidance based on function, design and management of "environmental protection zone" or similar to increase climate risks resilience of communities along the coastal strip of each FSM state.

- Provide performance and engineering standards for defences (materials to be used in FSM etc).
- Produce a document on guidelines for climate risk resilient coastal protection in FSM that can be endorsed at highest political level and used to help preparation of each States SMP).

OUTPUTS

- A summary of findings and recommendations on the issues, identifying weaknesses and malpractices.
- An analysis of social and economic costs and benefits associated with old and new coastal development and protection practices.
- amendments to the Land Use Planning Regulation on the environmental protection zone
- Guidance and proposed amendments to land use planning and EIA regulation, EIA process etc.
- Standards for best practices in coastal development.
- Develop comprehensive guidelines on climate risk resilient coastal protection for high, medium and low impact coastal developments. This should include but not limited to the following:
  i) Infrastructure developments;
  ii) Land reclamation;
  iii) Beach replenishment;
  iv) Harbour development (dredging, quay wall and breakwater development);
  v) Coastal protection (erosion prevention measures);
  vi) Access improvement (reef entrance channels, jetties and quay walls);
  vii) Over-water structure development;
  viii) Any other significant coastal development or constructions;
  ix) A monitoring and evaluation framework for coastal protection standard.

- A final comprehensive document on Guidelines for Climate Risk Resilient Coastal Protection in FSM for high level political endorsement (State Governor)

Appendix E. Detailed Description of Soft Engineering Approaches

The following presents a compendium of soft engineering adaptation options that could be used on outer atoll islands in FSM. Numerous gaps in information, weaknesses in existing measures and a major weakness in transfer of coastal adaptation technology across islands are identified.

Beach Recharge

Usage

The primary rationale for beach replenishment is to mitigate or compensate for erosion or loss of beach. Although beach replenishment itself does not address the causes of erosion, it provides natural buffer to attenuate the force of waves before they reach built infrastructure. In aesthetic terms, beach replenishment provides additional benefits for tourism development and recreation for local populations. Beach replenishment has not been commonly adopted as a procedure in FSM.

Design and construction

There are critical design aspects which must be considered in any beach replenishment projects. They include:

a. Estimation of maximum fill possible for a given sediment system;
b. Consideration of material size in relation to the existing sediment – replenished sediment needs to be coarser in nature to prevent suffocation of living organisms in the beach;
c. Proper sourcing and matching of sediment;
d. Proper beach profiling;
e. Timing of activities;
f. Environmental impact mitigation measures to minimize negative environmental impacts.

Beach replenishment is a temporary solution to the loss of beach and does not address the causes of erosion. The natural processes operating around the island dictates the stability of the fill material and beach profile in the post replenishment stage. Replenished profiles are rarely perfect and they may undergo rapid erosion in the first few months until a naturally adjusted or an 'equilibrium profile' for the cyclone period is reached. If an area has been replenished due to severe erosion, the area may continue to erode after replenishment, if the causes of erosion have not been addressed or if additional measures to reduce the loss of sediments are not in place (such as groynes).

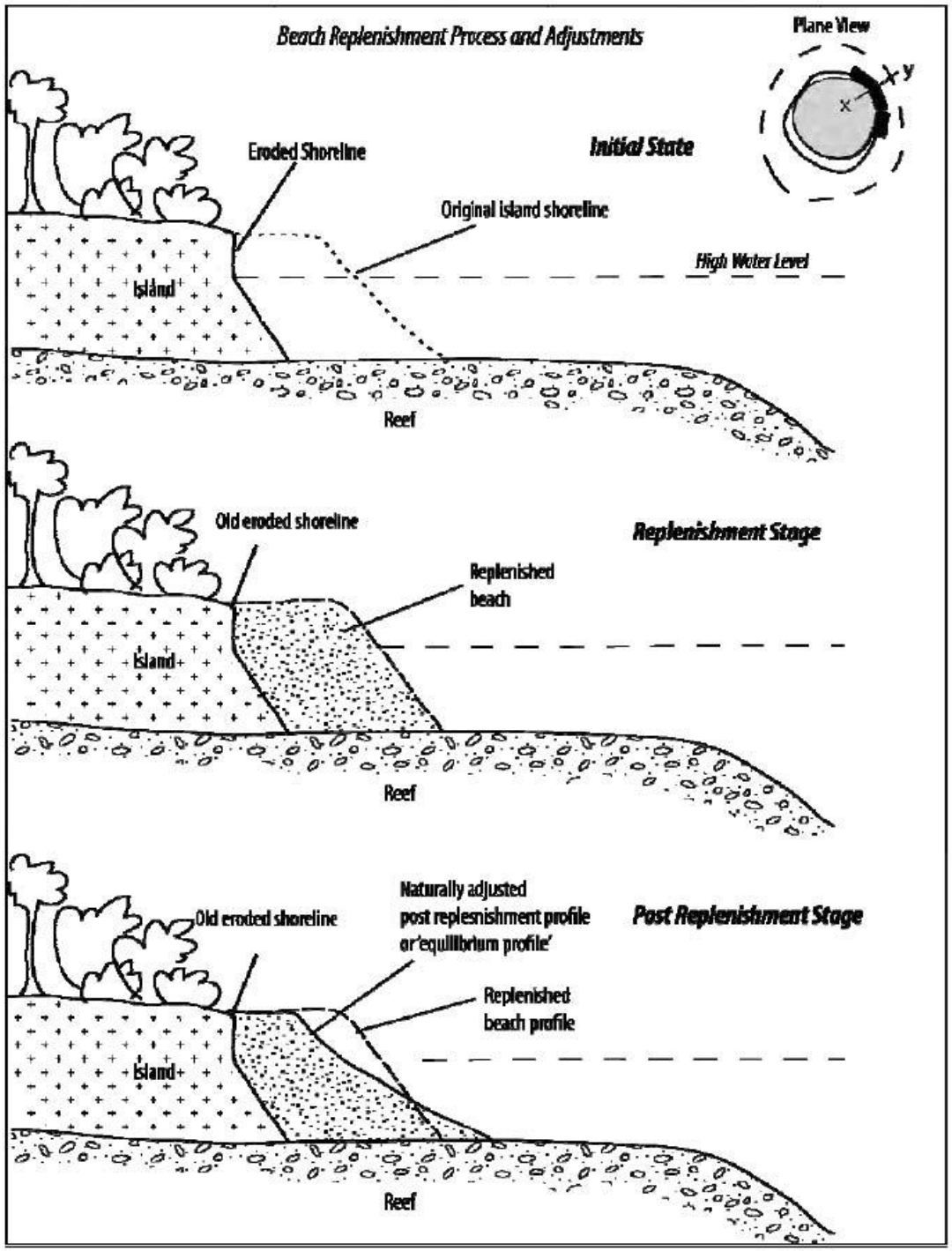
A number of islands may benefit from possessing their own sand pumps and conduct regular or periodic replenishment. The basic design principle for such islands is to pump sand to wherever erosion in prevalent. The general method of beach replenishment construction is to deploy a sand pump on a floating barge within a distance that matches the technical limits of the sand pump and to pump sand directly onto the beach. Loaders are used to distribute the sand and manual labour is used to profile the beach. Smaller projects may be implemented by a group of 5-10 people. Sand may be sourced from a distant reef system and transported in barges to the destination beach.

Best practice around the world suggests that newly pumped sand generally lasts from 2-10 seasons (i.e. about 5 years depending on storm frequency events) and is dependent on the previous extent of erosion and existing site conditions. Its effectiveness as a measure is often

dependent on many factors particularly, the prevailing hydrodynamic conditions, pumped sediment size compared the existing sediment size, beach profiling, sediment source or burrow area, width of replenishment and project timing, among others.

Costs

a. The unit costs per linear meter of a replenished beach are estimated at US$100 per linear meter.
b. An indicative cost of a small-scale sand pump is US$30,000
c. Maintenance sand pumping is required at a minimum of 2 years and a maximum of 5 years after the initial replenishment. Follow up replenishment intervals generally increase over time to an average of once every 5 years. The total volume of sand required for maintenance replenishment is estimated at 50% of the total volume. The total cost over a 20 year time frame including maintenance sand pumping is estimated at US$350 per linear m of recharge.


Beach Replenishment Process and Adjustments
Plane View
x
y
Initial State
Eroded Shoreline
Original island shoreline
High Water Level
Island
Reef
Old eroded shoreline
Replenishment Stage
Replenished
beach
Island
Reef
Old eroded shoreline
Naturally adjusted
post replesnishment profile
or'equilibrium profile'
Post Replenishment Stage
Replenished
beach profile
Island
Reef

Temporary Sand Groyne Structure

Usage
Temporary groynes are primarily used for emergency or seasonal erosion mitigation. The most important use of temporary groynes is to prevent the seasonal loss of beach in specific erosion hotspots. These structures are designed to arrest part of the sand migrating to other parts of the coastline. The structures are usually removed once the cyclone season reverts, but can be placed semi-permanently to reduce sedimentation loss after beach nourishment and reduce the maintenance costs into the future.

Design
There are no universally applied designs for temporary groynes. An island is likely to adopt a unique way of deploying, removing and arranging the structure. The most common material used for construction is nylon bags filled with sand. There are variations in the material ranging from coir weaved bags to geo-textile bags. The common features of these structures are that the individual modular units are small and can be easily transferred from one location to the other using manual labour.

Issues and challenges
In case of FSM, where loss of beaches is significant, the sandbags need to source sand from nearby lagoons. The use of poor quality bags is to be avoided as this can result in damaged empty bags being littered on to the reef or lagoon area.

Effectiveness
The most likely factors controlling effectiveness are hydrodynamic conditions of the lagoon or reef flat, structure height, depth, arrangement, bag size and type of material used for bags.

Costs
The unit costs per linear meter of temporary sandbag groyne are estimated at US$50 per linear meter. Maintenance is not required as new temporary seawall or groyne is placed every year.

Land-use Setback

Usage
Land use setbacks are used both as a voluntary adaptation measure and as a regulatory requirement (though currently this is not formally established in FSM within formal legislation). Similar small island nations (such as Maldives) have set a regulatory setback requirement as being a minimum of 20m from the vegetation line. Generally, there is a difference in the setbacks between oceanward side and lagoon ward side of atoll rim islands. Setbacks on the oceanward side are often wider, especially in locations where strong wave conditions are experienced and on islands with smaller distances between reef edge and oceanward shoreline.

Design
The design of setbacks is usually (or should be) incorporated into a States Strategic Development Strategy during the planning stage. In FSM, setbacks are most strictly applied to housing plots. Often, infrastructure developments such as power houses and communication facilities are allowed to get a lot closer to the vegetation line than housing plots.

Issues and challenges
Setbacks are difficult to implement when implemented without policy/regulatory backings, and there is a land shortage, especially if there is no land use plan. Setbacks are not equally applied to infrastructure development. The proposed project will first raise awareness among the Island Development Committee about the necessity and demonstrate in one location.

Effectiveness
The use of setbacks has been proven as an effective method of adaptation in most islands. However, this method is dependent on the commitment by island administrators and developers to implement the land use planning guidelines. On a number of occasions new plots are allocated with limited setbacks and in erosion prone areas. A Shoreline Management Framework, that establishes clear setback guidance, needs to be established within the coming years.

Retention and Replanting of Coastal Vegetation

Coastal vegetation is known to play a major role in reducing the exposure and impacts of natural hazards in FSM. In particular, mangrove plantation is one of the very few soft engineering shoreline management techniques that has been implemented in FSM – mainly in FSMtapu and Va'vau. In the face of predicted intensity and frequency of natural hazards due to climate change, and logistical challenges in implementing hard engineering solutions in many remote islands, coastal vegetation may have a crucial role to play in the adaptation of small islands, particularly to coastal flood impacts and strong wind.

Usage
Coastal vegetation has been retained in most islands as a traditional adaptation measure against strong wind, resulting salt spray and occasional coastal flooding. In general, good practice dictates the following approaches can be proposed.

a. The oceanward shoreline of islands, exposed to strong winds and salt spray during cyclones, should have a wider coastal vegetation system (see Figure below).
b. Similarly, the oceanward shoreline of islands, should have a wider coastal vegetation system. This could either be related to strong wave activity during NE monsoon or due the relatively large size of the islands.
c. Islands less exposed to regular strong wave activity, may have comparatively narrow coastal vegetation systems.

Coastal vegetation is generally retained as an adaptation measure in high exposure islands and where beach replenishment or reclamation, vegetation is replanted. Replanting is generally done using common coastal vegetation species present on the island. Coastal vegetation retention is strongly linked to other soft engineering measures such as land-use setbacks, artificial beach recharge and preservation of coastal measures.

Effectiveness

The use coastal vegetation preservation and coastal ridge maintenance is the most common method used against coastal flooding and to some extent against erosion. The effectiveness of ridges and vegetation belt are felt significantly in high flood exposure zones. Given the success of ridges and coastal vegetation in some FSM islands, artificial development of storm ridges are expected to be highly successful in FSM islands against potential storm and flood events. Based on past initiatives, the effectiveness of mangrove plantation largely depends on availability of fencing to prevent feral pigs from eating mangrove seedlings. Thus, the cost of mangrove plantation includes the necessary fencing costs.

Costs

a. Each seedling is about $0.5.
b. The costs of seedlings, labor, transport, materials for fencing, and tools for plantation of 1,000m^2 were $23,500 and $22,000 respectively.

Preservation of Coastal Ridges

Similar to coastal vegetation, coastal ridges are known to play a crucial role in the natural and planned adaptation to natural hazards in FSM.

Usage

Ridges are natural adaptation of island coastlines to prevailing wind and wave conditions at the site. They are generally left untouched, especially in islands with high wind and wave exposure. Ridges are treated as part of the coastal buffer zone and are usually used as an adaptation measure with land use setbacks and coastal vegetation retention. Not all islands have a well-defined coastal ridge. Figure E1 shows a graphical summary of ridge height variations across FSM. The use of artificial ridges as a soft engineering measure reduces the impacts of future coastal flooding from increasing abnormal climatic activity on certain islands. Artificial ridges have been used as an adaptation measure in the ‘Safe Island’ or ‘resilient island’ concepts in the Maldives. They can be constructed from lagoon sand and/or construction debris.

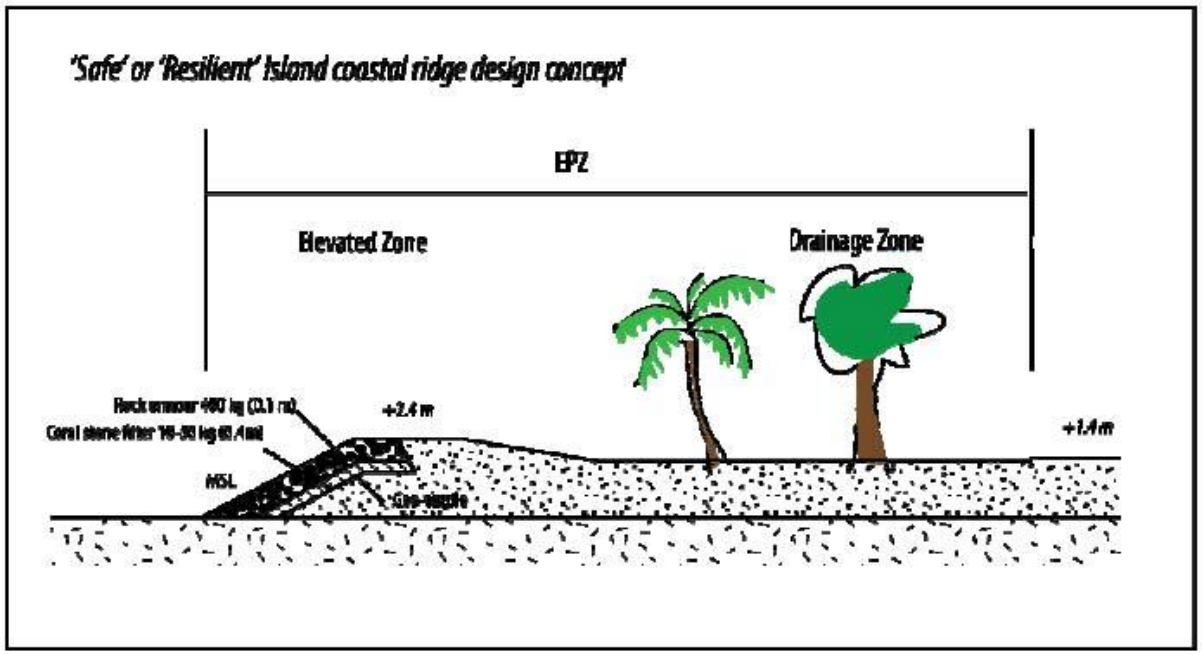


Figure E1 Coastal Ridge Design

Design aspects and natural patterns

Similar to coastal vegetation system, there is no specific design for the maintenance of coastal ridges. The basic components of a ridge are its height, width, slope and sediment composition. Soft engineering measures proposed under this project will involve the use of lagoon sand to enhance the existing ridge. The use of lagoon sand will require proper profiling of ridges and the use of sediments of larger or equal size. In addition, re-establishment of coastal vegetation is crucial to naturally stabilize the ridge.

Designs have been prepared for safe or resilient island ridges in countries such as the Maldives. The design incorporates artificial planting of coastal vegetation, drainage and construction setbacks as well, with a fixed width of 40 m. A specific assessment of FSM atoll islands has not been undertaken at this time.

Costs

The unit cost per linear meter of a raised ridge is estimated at US$100 per linear meter. Maintenance does not involve any additional costs once ridge is established.

Artificial Coral Reefs

Usage
Artificial reefs are sometimes used on small island states to act as a natural submerged breakwater structure to mitigate the force of wave actions. Applications can be observed in the Maldives, South Pacific and Caribbean. Successful applications also enhance the reef as a tourism product as it provides habitats for fish population.

Artificial reef installations (either as commercial patented products such as EcoReef designs or simple rough surface concrete blocks) can create the ecological conditions that help young corals survive in otherwise hostile environments by providing:

- **Stabilization of loose sediments over the site**. Young corals are easily abraded or buried by moving sand and sediment. Reef installations can be engineered to efficiently cover large areas and slow the flow of water over the entire site, which helps reduce sediment movement. In addition, the installations (i.e. patented modules or simple concrete blocks) can be designed with settlement surfaces raised up off the seabed. This provides young corals and other invertebrates safe places to grow that are well-protected from sand scour.
- **Canopy habitat to protect small grazing fish.** Corals depend on the presence of small fish, especially grazers (herbivores), for their survival. Grazers are important because they eat fast-growing algae that would otherwise quickly overgrow and kill young corals. Installation modules create a dense, protective canopy of interlocking branches that provides high-quality habitat for large numbers of small fish.
- **Substrate for coral recruits**. Planktonic coral larvae can't settle on algae covered surfaces, instead they need clean, chemically inert surfaces. The grazing activity of small fish keeps any rough surface installations clean, and provides a steady supply of bare surfaces for settlement of planktonic coral larvae.
- **Complex habitat with high niche potential**. When deployed in large arrays, installations can create complex, naturalistic habitats that that mimic those of natural reefs. Such habitats offer a wide variety of shade, textures, micro-turbulence, and flow regimes needed by fish and invertebrates. Installations can be used alone or in conjunction with other environmentally-appropriate materials to further increase habitat complexity.

Artificial reefs installations often find that naturally-recruited young corals are visible within two years of installation, and that any transplanted corals will be well established in similar timeframe. Some of the faster growing species (*Acropora* spp.) can start to overtop the installation within 18 months of transplantation.

It is also recommended that any pilot project works within (or seek to establish) a marine conservation framework to limit potential uses that may negatively impact the site (e.g. fishing, anchoring, collecting, road building). Where traditional enforcement is not an option, it is advocated that the establishment of a community-based conservation programme is set up.

Appendix F: On-going Climate Change Adaptation Activities

Infrastructure Development Plan (2004-2023) prepared by the Dept. of Transport, Communications & Infrastructure	Under the Infrastructure Development Plan (2004-2023), the Kosrae Circumferential Road was identified as a national priority and investment needs and options were presented. The Compact of Free Association provides for investment in road infrastructure under the Infrastructure Sector Grant. The State of Kosrae has identified the circumferential road as one of the projects to be funded under the Infrastructure Sector Grant. However, the Joint Economic Management Committee (JEMCO) consisting of three representatives of the US Government and two representatives of the FSM Government which overseas the management and utilization of sector grants under the Compact of Free Association prioritizes education and health infrastructure projects. With the exception of the road project in Weno, Chuuk, which was prioritized because it includes replacing the aging water and sewer systems, other road infrastructure projects in the FSM that have been submitted for consideration by JEMCO have been placed on the "back burner". The current priority focus for JEMCO for the use of the Infrastructure Sector Grant is on education and health infrastructures such as schools, education centers, hospitals, community health centers, dispensaries, and anything related to social infrastructures.
The Nature Conservancy **"Building the Resilience of Communities and their Ecosystems to the Impacts of Climate Change in Micronesia and Melanesia (International Climate Initiative – 2011)"** **Proposal stage**	The Nature Conservancy (TNC) will lead the project and connect institutions and organizations across Micronesia and from Melanesia towards common goals and outputs. TNC will carry this task in close coordination with other lead organizations. TNC will provide and lead direct technical assistance relating to climate change adaptation assessments and planning, support learning and knowledge management for the project, and help mobilise and leverage project lessons through networks and platforms at regional and global levels. TNC will provide overall grant management, reporting and oversight for the partnership. ***Federated States of Micronesia**:* Department of Resources and Development, Ms. Alissa Takesy, Assistant Secretary Micronesia Challenge Focal Point, Federated States of Micronesia, P.O. Box PS-12, Palikir, Pohnpei FM 96941, Tel: (691) 320-2646/5133/2620; Fax: (691) 320-5854/2079 Email: alissa.takesy@fsmrd.fm
Micronesia Challenge (MC) ***2006 - ongoing***	Sub-regional conservation initiative which enhances community resiliency by using traditional knowledge and ecosystem strategies to conserve vulnerable coastal land resources by 2020; goals are to effectively conserve at least 30% of near-shore resources and 20% of terrestrial resources. The MC includes: Micronesians in Island Conservation Network (MIC); Pacific Islands Managed and Protected Area Community (PIMPAC); Locally Managed Marine Area Network – Micronesia Node (LMMA}; Micronesia Challenge Young Champions Agencies responsible: Micronesia Chief Executives (Guam, Mariana Islands, FSM, Palau and RMI); The Nature Conservancy (TNC); NOAA. Micronesia Conservation Trust (MCT)
Micronesia Conservation Trust (MCT) ***2002 - ongoing***	MCT was formally established by TNC in 2002 as a charitable and irrevocable corporation organized to manage and provide funds for the accomplishment of the following mission: "to support biodiversity conservation and related sustainable development for the people of Micronesia by providing long term sustained funding." In 2006, MCT was selected as the financial mechanism for the MC and has since fully regionalized its Board and organizational structure and services. MCT is administered under FSM law, has a Board of Trustees.
Pacific Adaptation to Climate Change Project (PACC) ***2009 - 2013***	The PACC Project is designed to promote climate change adaptation as a key pre-requisite to sustainable development in Pacific Island countries. Its objective is to enhance the capacity of the participating countries to adapt to climate change and climate variability, in key development sectors. Mainstreaming, demonstration and communications are implemented at the community and country levels. The project aims to assist FSM develop its food preservation and security needs, coastal management needs, and water management needs.

	Kosrae was chosen as pilot State focusing on coastal infrastructure e.g. roads that are already experiencing erosion from sea level rise and flooding. - Agencies responsible: UNDP (implementing agency); GEF, AUSAID (funding agencies); SPREP (implementing partner). FSM Kosrae Island Resource Management Authority (KIRMA)
International Climate Change Adaptation Initiative-Pacific Adaptation Strategy Assistance Program (ICCAI PASAP), ***2011-2013*:**	Aims to enhance the capacity of partner country to assess key vulnerabilities and risks, formulate adaptation strategies and plans and mainstream adaptation into decision making. The major output of the PASAP project is: Country (FSM)-led vulnerability assessment and adaptive strategies informed by best practice methods and improved knowledge. The project activities included community participatory surveys conducted in Yap which included Ulithi and Fais Atolls; evidence-based field research conducted on drought and salt tolerant varieties of sweet potatoes and sweet taro in Dinay and Wugeem, Yap; etc. Agencies responsible: Australian Department of Climate Change and Energy Efficiency (DCCEE), SPREP, SPC. COM-FSM CRE, State Departments of Agriculture, NGOs, and community members.
Geospatial Analysis for Food Security Adaptation **2013-2015**	Trying to find suitable places to relocate the agricultural areas (particularly taro) with the help of geospatial analysis (GPS, remote sensing) and geographic information systems. funded by a three-year, $150,000 grant from the U.S. Forest Service Queens University of Charlotte, Yap State R&D
Pacific - Australia Climate Change Science and Adaptation Planning Program (PACCSAP) ***2011 - 2013***	PACCSAP: supporting the government of FSM develop improved climate change projections and adaptation planning activities. FSM and 14 other Pacific countries are part of this AUD$32 million project which builds on the foundation of the Pacific Climate Change Science Programme and the Pacific Adaptation Strategy Assistance Programme. Agencies responsible: AUSAID; Australian Department of Climate Change and Energy Efficiency (DCCEE); Australian Bureau of Meteorology, CSIRO, FSM OEEM
Implementing Sustainable Water Resources and Wastewater Management in Pacific Island Countries (Pacific IWRM) ***2008–2013 with Phase 2 (2013-2015) and 3 (2015-2018) being planned.***	Pacific IWRM is developing "Ridge to Reef – Community to Catchment" integrated water resource management (IWRM) activities in the 14 participating Pacific Island Countries. The FSM's GEF Pacific IWRM Demonstration Project entitled "Ridge to Reef: Protecting Water Quality from Source to Sea" has strengthened national coordination in the water and sanitation sector and has enhanced community collaboration to improve water resource management. It has three main foci—(i) protected areas (improving existing ones and creating new ones), (ii) managing ecosystems outside protected areas, and (iii) improving agro ecosystems. Agencies responsible: GEF; SPC Applied Geosciences and Technology Division,FSM R&D
Water and Environmental Research Institute of the Western Pacific (WERI), ***1985 ongoing***	Their mission is to seek solutions through research, teaching and outreach programs, to issues and problems associated with the location, production, distribution and management of freshwater resources in Micronesia. Current projects and programs include watershed management program, rooftop rain catchment sizing, groundwater and aquifer research, atoll hydrologic modelling, water quality production and distribution, water resources management and GIS. Agencies Responsible University of Guam, FSM? Island Research,
Global Climate Change Alliance: Pacific Small Island States (SPC-GCCA:PSIS)	The overall objective of the GCCA:PSIS is to support the governments of nine Pacific smaller island states, including FSM, in their efforts to tackle the adverse effects of climate change. Overall available funding is 11m EUR. In FSM the key adaptation activity focus of the project is addressing coastal water and food security in the outlying islands of

2011 – 2014	Agencies responsible: European Union (EU); SPC (Implementation); SPREP. FSM OEEM
University of the South Pacific European Union Global Climate Change Alliance Project (USP-EU GCCA Project *2011 – 2014*	The USP-EU GCCA project addresses the challenges of climate change impacts in the 15 Pacific ACP countries, including FSM, through capacity building, community engagement, and applied research. The objective of this project is to develop and strengthen the Pacific ACP countries' capacity to adapt to the impacts of climate change. Overall available funding is € 8m. Agencies responsible: EU; USP,.FSM- MFA
North Pacific ACP Renewable Energy and Energy Efficiency Project (North-REP) ***2010 – 2014***	The overall objective of North-REP is to improve the quality of life on the outer islands by increasing access to basic electricity and reducing dependency on fossil fuels through energy efficiency and increased penetration of matured renewable energy technologies in the North-REP countries (FSM, RMI and Palau). Overall available funding for FSM is 10m USD. Agencies responsible: EU; SPC (implementing agency); FSM R&D.
Coping with Climate Change in the Pacific Island Region (CCCPIR) ***2009 – 2015***	CCCPIR covers 12 Pacific Island Countries and six components ranging from regional and national mainstreaming of climate change, implementation of adaptation activities on the ground, and climate change related to tourism, energy and education. In FSM CCCPIR is undertaking mainstreaming climate change, and integrated land and marine resource management at the national and local level. Overall available funding is 17m EUR. FSM is eligible for up to 440,000 USD.depending on project design. Agencies responsible: German Ministry for Economic Cooperation and Development (BMZ, funding); German International Cooperation (GIZ, implementing agency); SPC (regional partner), FSM OEEM, R&D
ADAPT Asia – Pacific Annual Forum on Adaptation ***2012 onwards***	Designed to help Asia-Pacific country governments understand the technical and scientific demands required to apply for climate finance. Agency responsible: USAID, FSM OEEM
National Climate Change and Health Action Plan (NCCHAP) ***2010-2013***	Regional framework for action to protect human health from effects of climate change in the South East Asia and Pacific region. Agencies responsible: WHO,FSM DHSA, State EPAs, OEEM, WSO
Technical Assistance(TA) to the Federated States of Micronesia for Strengthening Infrastructure Planning and Implementation ***2011-2013***	TA will support state utilities within the FSM) in executing infrastructure projects more effectively by having an agreed upon approach to systems and procedures for project planning, design, and management across the country; and build capacity in the Department of Transportation, Communications and Infrastructure (DTCI) to plan, design, and oversee project execution. The Government of FSM has requested ADB to finance $700,000 equivalent. Agencies responsible: ADB, Japan Fund for Poverty Reduction, FSM TC&I
Second National Communications to the UNFCCC ***2006-2012***	National obligation under the UNFCCC to produce status report on national climate change measures and priorities. FSM is using a consultative approach involving a range of stakeholders to produce this report. USD 425,000 Agencies Responsible, GEF, UNDP, FSM – OEEM, R&D, State Environmental Protection Agencies
$MAPCO_2$ Project ***2011 - ongoing***	A $MAPCO_2$ was deployed within the Chuuk Lagoon in November 2011. The goal of this joint effort is to establish a long term monitoring station in Micronesia as part of global ocean monitoring network system for coral reef areas. Agencies responsible: NOAA's PMEL Carbon Group; Korea Ocean Research and Development Institute. FSM R&D
Pacific Islands Climate Education Partnership (PCEP)	Educates students and citizens across the Pacific about the urgency of climate change impacts in ways that exemplify modern science and honour indigenous cultures and environmental knowledge, so that students and citizens within the region will have the knowledge and skills to improve understandings of climate change and adapt to its impacts.US National Science Foundation (NSF); WestEd, FSM OEEM, National and State

2011–ongoing	Departments of Education, Pacific Resources for Education and Learning (PREL)
Unite for Climate	Children's vulnerability to climate change and disaster impacts in East Asia and the Pacific. Agency responsible: UNICEF, FSM Department of Health and Social Affairs,
Pacific Regional Integrated Sciences and Assessments (Pacific RISA) ***1995 -ongoing***	Strives to enhance Pacific Island communities' abilities to understand, plan for, and respond to a changing climate. Emphasizing the engagement of communities, governments, businesses, and scientists by translating scientific research into information and materials that are valuable for stakeholders in key sectors such as water resources. Climate focused water sector education and outreach is part of Pacific RISA's core mission . Agencies Responsible National Oceanic and Atmospheric Administration (NOAA) WSO.
Schools of the Pacific Rainfall Climate Experiment (SPaRCE) ***1995–ongoing***	The SPaRCE programme seeks to increase awareness of the younger generations about global environmental issues, such as climate change, with hands-on experience by involving them in the collection of rainfall data. Agencies Responsible: University of Oklahoma, FSM DoE, WSO
Climate Adaptation, Disaster Risk Reduction and Education (CADRE) ***2011 -2014***	Aims to build resilience of vulnerable communities to natural hazards particularly those that are climate induced. Will target approximately 10,000 school aged students at up to 50 schools with climate adaptation, disaster risk reduction and education program. Track 1 educational component, including capacity building of students, teachers, administrators and the local community; technical assessments of climate change impact and disaster risk on schools grounds, and the surrounding community. Track 2 roll out of adaptation measures stemming from the recommendations contained within the change impact assessments and exercising of the climate adaptation and disaster risk management plans Agencies responsible: USAID, AusAID, IOM, FSM OEEM, National and State Departments of Education
FSM Joint National Action Policy and State Action Plans for Climate Change Adaptation and Disaster Risk Management ***2013-2018***	Following a request by FSM in 2012, CROP agencies are providing assistance for the FSM and its States with the development of this policy and plans. Agencies Responsible: SPC, EU, SPREP, FSM OEEM
U.S. Peace Corps Small Project Assistance (SPA) for Adaptation, ***2013-2017***	This project will extend USAID's reach to remote communities by supporting the following efforts of Peace Corps volunteers: (1) development of youth camps that promote environmental awareness, knowledge and skills among the youth to become responsible natural resource stewards; (2) trainings that support community adaptation to climate change and build capacity for disaster risk reduction (DRR); and (3) small-scale community projects that can demonstrate application of climate change and DRR principles. Implementing Organization: U.S. Peace Corps, USAID, FSM
Coastal Community Adaptation Project (C-CAP), ***2013-2017***	This project aims to build the resiliency of vulnerable coastal communities in the Pacific region to withstand more intense and frequent weather events and ecosystem degradation in the short-term, and sea level rise in the long-term. The project has three components: (1) rehabilitating or constructing new, small-scale community infrastructure; (2) building capacity for community engagement for disaster prevention and preparedness; and (3) integrating climate resilient policies and practices into long-term land use plans and building standards. USAID Implementing Organization: Development Alternatives, Inc. (DAI), University of the South Pacific (USP); Kramer Ausenco Papua New Guinea Limited, FSM OEEM

Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) ***2007- 2015***	Aims to provide the Pacific Island Countries (PICs) with disaster risk modeling and assessment tools to help them better understand, model, and assess their exposure to natural disasters, and to engage in a dialogue on integrated financial solutions for the reduction of PICs financial vulnerability to natural disasters and to climate change. The initiative is part of the broader agenda on disaster risk management and climate change adaptation in the Pacific region. Responsible Agencies: SPC, WB and ADB, Japan, Pacific Disaster Centre, with technical inputs from GNS Science, Geoscience Australia, and AIR Worldwide

Appendix G – Proposed Project Areas

To complement the proposed LDCF contributions to FSM ("Ridge to Reef" project – R2R) whose approach focuses specifically on the main islands ("high islands") of each State, this proposal seeks to provide, in addition to national and State wide institutional, regulatory and legislative guidance work, a series of contributory support interventions for 6 (six) coastal communities in the **lower lying atoll islands of the 3 States of Yap, Chuuk and Pohnpei**. Component 3 (implementation of the Kosrae Shoreline Management Plan (SMP)) however focuses specifically on the main "high island" of Kosrae.

The following information provides a summary of each State and also indicative locations for soft coastal engineering intervention measures (which have been endorsed by each State Governor visited during December 2013).

NB: a rapid multi-criteria analysis exercise was carried out to help prioritise intervention areas and technique proposals.

Yap State: Yap's indigenous island cultures and traditions are still strong compared to neighbouring regions. The main district of Yap consists of four islands with geology that is non-volcanic in origin. The four are very close together and joined within a common coral reef and entirely formed from uplift of the Philippine Plate. The land is mostly rolling hills densely covered with vegetation. Mangrove forests line much of the shore although beaches are common in some areas. An outer barrier reef and lagoon surrounds the islands and their fringing reef. Colonia is the capital of Yap State. It administers both Yap proper and 14 atolls reaching to the east and south for some 800 kilometers, namely Eauripik, Elato, Fais, Faraulep, Gaferut, Ifalik, Lamotrek, Ngulu, Olimarao, Piagailoe (West Fayu), Pikelot, Sorol, Ulithi, and Woleai atolls, as well as the island of Satawa. The 2009 state wide population was 11,780. The state has a total land area of 102 km2. The tidal surges of 2007 and 2008 caused significant damage to coastal infrastructure, food resources, and housing. Yap is well developed and has a generally high quality of life.

The central business district of Yap is built around a harbour, the shoreline of which is armoured by well-designed and engineered walls and revetments. However, the top elevation of most of this coastal protection is only 30-60cm above high tide. By mid-century or earlier, these protections will need upward extension to protect the critical roads, fuel depots, buildings, and freight handling facilities lining the harbour. Over the next decade, climate risk management can focus on building a community-based adaptation program to improve climate risk management.

Proposed atoll islands for intervention within Yap State are identified in Table 3. The island of Fais is currently being piloted for a water resource management project (using funds from EU GCCA as part of the IWRM Project – see Part II). For this proposal, the atoll islands of Eauripik and Woleai are nominated for soft coastal engineering interventions based on clear advice from the State Government. The recent impacts caused by Typhoon Haiyan were felt very strongly at these islands and emergency assistance needed to be shipped to the communities there, where major tidal inundation occurred.

Chuuk State: The main population center of Chuuk State is the main Chuuk Lagoon, an archipelago with about 7 mountainous islands within it surrounded by a string of islets on a barrier reef. The two major geographical divisions of the Chuuk Lagoon are Faichuuk, the western islands, and Namoneas, the eastern islands. Chuuk State, population 53,106, also includes several additional sparsely populated outer island groups, including the Mortlock Islands to the southeast, the Hall Islands (Pafeng) to the north, Namonuito Atoll to the northwest, and the Pattiw Region to west. The Pattiw Region includes the islands of Pollap, Tamatam, Poluwat, and Houk.

Most of the roads and transportation systems are poor or in disrepair. These are regularly inundated by daily tides. No climate proofing of roads takes place. Potholes in the coastal road of the business district of Chuuk are often filled with either saltwater at high tide or runoff that cannot drain due to the low elevation. The tidal surges of 2007 and 2008 caused significant damage to coastal infrastructure, food resources, and housing. On July 2, 2002, heavy rains from Tropical Storm Chataan caused more than 30

landslides that killed 47 people and injured dozens of others in the state's deadliest weather disaster. The landslides occurred throughout the day, some within just minutes of one another.

It is apparent that investment in Chuuk already scheduled to refurbish the main road and buried infrastructure is committed and planned for immediate ground breaking. Unfortunately, the pace of climate change has already made some design elements of these large infrastructure projects out of date. Adding to the elevation of the main road in Chuuk would likely permit avoidance of significant drainage problems related to sea-level rise for a period of years to decades depending on the amount of adjustment. The addition of 0.5 meters to the roadbed, and incorporation of enhanced drainage features, will likely pay dividends in flooding avoidance for a few decades.

Proposed atoll islands for intervention within Chuuk State are identified in Table 3. For this proposal, the island of Pis Panewu (northern edge of the Chuuk Lagoon) has been highlighted as a good example to help demonstrate soft coastal engineering techniques (e.g.: beach ridge rehabilitation and coastal vegetative planting). On outer atolls, the islands of Satawan and Lukanor are nominated for soft coastal engineering interventions based on clear advice from the State Governor.

Pohnpei State. Pohnpei is a "high" volcanic island, having a rugged, mountainous interior with some peaks as high as 760 meters. It measures about 130 kilometers in circumference and is roughly circular in shape. Pohnpei Island is the largest, highest, most populated, and most developed island in FSM. A coral reef surrounds the island, forming a protected lagoon. There are no beaches on Pohnpei – the coast is surrounded by mangrove forests/stands growing on muddy substrate eroded from interior wetlands in the rainy environment. Several smaller islets, many of them inhabited, lie nearby within the lagoon-reef complex. The population of Pohnpei is approximately 34,840. Pohnpei is more ethnically diverse than any other island in the FSM. This is largely due to it being home to the capitol of the national government, which employs hundreds of people from the other FSM States having distinct ethnic and cultural origins. The indigenous makeup also includes people from the outer islands within the State, which comprise multiple regional ethnicities. Outer islands in Pohnpei include Pingelap, Mokil, Ant, Pakin, Ngatik, Nukuoro, and Kapingamarangi. These are atoll islets that suffered extreme hardship during the marine inundation events of 2007 and 2008.Typhoons rarely hit Pohnpei; more often they are spawned in Micronesia and move on to Guam and the Commonwealth of the Northern Marianas Islands. Every several years or so (on average), a mildly damaging tropical storm or depression will affect Pohnpei. Strong El Niño events can cause prolonged drought of many weeks or even months, as was seen in 1997-1998. The tidal surges of 2007 and 2008 caused significant damage to coastal infrastructure in low-lying areas. Without a specific plan to manage coastal problems, Pohnpei shoreline areas will lack a degree of resiliency, resources will be exposed to depletion, and improvements through investment may be outpaced by the scale of climate change unless a specific plan is developed.

Proposed atoll islands for intervention within Pohnpei State are identified in Table 3. On outer atoll, the islands of Nukuoro, and Kapingamarangi are nominated for soft coastal engineering interventions based on clear advice from the State Governor and the EPA. These islands were the focus of the Sustainable Land Management (SLM) project and hence a degree of continuity can be established on these islands (only circa US$25,000 per island received hence minimal intervention taken place to date).

Kosrae State: The island of Kosrae is the easternmost island in FSM. Kosrae is a 112 km2 volcanic island surrounded by mangroves and coastal strand forests that have been historically used for lumber and fuel by residents. There is a shallow fringing reef spotted with boulders of limestone quarried from the fore-reef by high-energy wave events (storms, tsunamis, and other overwash processes). There are no outer islands.

The island has steep, heavily vegetated watersheds with unstable slopes. Intense rainfall denudes exposed soil in areas of deforestation. Invasive vegetation is prolific and has taken a foothold in every watershed. The population of approximately 8,247 is largely dependent upon fishing and farming for their livelihood. Kosrae has unique needs with regard to climate risk management and adaptation. The majority of the coastline is experiencing chronic erosion, in places related to engineering projects that have caused down-drift sediment deficiencies over the past four decades. Additional causes of erosion include

offshore mining of the reef flat for construction materials, beach mining for sand and gravel resources, and interruptions to alongshore sediment transport by engineering projects; in some areas erosion is occurring for reasons that are not entirely known but are probably, in part, related to sea-level rise. The widespread "telescoping" of erosion along the coast by armouring, and beach loss in front of seawalls and revetments, has produced a chronic deficiency in sand that formerly constituted beautiful beaches ringing the island. These beaches lent protection to coastal communities, ambience to tourism and a quality of life to residents that is at risk. The maximum overwash elevation of the recent tide surges is likely to be reached in future events with greater frequency. Generally, designing structures such that overwash may run beneath the structure increases community resilience. Buildings with their lowest horizontal structural component set above the maximum elevation of the December 2008 overwash plus 1 meter will be less prone to damage and more resilient to recovery. The maximum overwash elevation, plus 1 meter, represents a base flood elevation (BFE) for new construction and for renovation of existing buildings. Some key data from the 2010 FSM Census for Kosrae (to help with justifying Component 3 interventions) are presented below:

Kosrae 2010 census data

Malem population – 1300

- Male – 663
- Female - 637
- No of houses - 238

Utwe population – 983

- Male – 458
- Female – 525
- 23% of population high school age – need daily access to High school in Tofol
- No of houses – 161
- On pro-rata basis probably about 90 people in Utwe employed by National Government requiring daily access

Walung

- No census data for Walung (< 100 people?) as lumped with Tafunsak.
- Theoretically only road from Walung to rest of Kosrae is via Utwe (however, everyone at present uses boat to Tafunsak). But ultimately this will be the only road to Walung as road south from Tafunsak now suspended due to the Yela area being protected.

- So essentially 2 of the five villages reliant on the road access as the only connection to the rest of Kosrae and the main administrative centre at Tofol, medical facilities etc, and airport.
- Boat access from Utwe to Lelu not an option (as occurs from Walung to Tafunsak) as would be travelling on the windward (rough) side of the island

Tourism (reliant on access to Utwe)

- One dive operator (Kosrae village Resort) operates primarily out of Utwe, other operators on occasion.
- Tourism activities include Menke ruins hike, Mt Finkol hike, Sipian and other waterfalls, Utwe-Walung Marine Park

Access to traditional lands

Malem village was traditionally located at Kupluh (SW of Malem) on the volcanic part of the island prior to Missionaries arriving and moving everyone closer to the coast. Long desire by Malem local administration to upgrade, and develop the inland road to improve access to people's land which has limited vehicular access at present.

Desire to relocate inland

- Strong realisation that relocation will need to occur over time and best way to do this is in a staged approach over 1-2 generations as people come to build/rebuild houses etc
- Major barrier is lack on infrastructure (roads, power) around edge of volcanic part of the island.

Infrastructure location a major driver of where populations relocate on Kosrae.

State	Atoll Island for intervention	Indicative population to benefit	Google Earth Image
Yap	Eauripik Woleai	450 275	 
Chuuk	Satawan Island Lukanor Island	250 150	 
Pohnpei	Nukuoro, and Kapingamarangi	Circa 675 (combined)	 

Table 3: Proposed "Soft Coastal Engineering" Intervention Islands for Yap, Chuuk and Pohnpei

Appendix H – Project Implementation Gantt Chart

Particulars	Schedule															
Years	Year 1				Year 2				Year 3				Year 4			
Quarters	1	2	3	4	1	2	3	4	1	2	3	4	1	1	3	4
Project Inception																
Project Inception Workshops	x															
Outcome 1 Capacity developed for efficient and effective support at national level to deliver climate resilient policies and enforce regulations for the coastal zone.																
Output 1.1 Legislation and policy paper to guide regulation of climate resilient coastal and marine management for each FSM State																
Activity 1.1.1 National and State Legal and Regulatory Policy assessment		x														
Activity 1.1.2 Review of regulatory inspection procedures, protocols and enforcement		x	x													
Output 1.2 Approved Shoreline Management Plans (SMPs) for Yap, Chuuk and Pohnpei States																
Activity 1.2.1 Review baseline data and information on coastal environment		x														
Activity 1.2.2 Assess the socio-economic and ecological developments of the coastal areas			x	x	x	x										
Activity 1.2.3 Draft the Shoreline Management Plan for each State and endorse at the highest level						x	x	x								
Output 1.3 Coastal Development and Environmental Policy Guidelines developed for each State																
Activity 1.3.1 State specific Coastal Development Guidance Manuals produced																
Activity 1.3.2 State specific Environmental Policy Guidelines developed, reviewed and updated									x	x						
Activity 1.3.3 Endorse and adopt the Environmental Policy Guidelines and Manuals									x	x						
Output 1.4 Establish climate resilient engineering and construction (building) standards and protocols for future coastal infrastructure construction within each FSM State																
Activity 1.4.1 Coastal Infrastructure Engineering Guidelines developed and applied			x	x	x	x		x	x	x	x					
Activity 1.4.2 Climate Resilient Roads Standards developed and applied			x	x	x	x	x				vvvv	x	x			
Outcome 2 Improved resilience of Yap, Chuuk, and Pohnpei coastal communities to climate change																
Output 2.1 Six integrated soft coastal adaptation interventions completed on 6 atoll islands in Yap, Chuuk and Pohnpei.																
Activity 2.1.1 Community inception and awareness workshops and Community/Island Development Plans developed for all six islands.								x								
Activity 2.1.2 Carry out environmental risk assessments								x	x							
Activity 2.1.3 Identification and demonstration of adaptive			x	x	x	x	x	x	x	x	x					

agriculture crops, water harvesting, and coastal marine resource management practices in each State																
Activity 2.1.4 Supply of agricultural inputs, water conservation equipment and marine management devices					x	x	x	x	x	x	x	x	x	x	x	
Outcome 3 - Increased resilience of Kosrae coastal communities to climate change																
Output 3.1 Intervention A: New road section construction (Malem to Yeseng) plus access routes to the two villages.																
Activity 3.1.1 Comply with EIA guidelines and 2013 Regulations for Project Developments		x	x													
Activity 3.1.2 Construct the access route inland from Malem			x	x												
Activity 3.1.3 Construct the access route inland from Yeseng					x	x										
Activity 3.1.4 Construct the new 2,000m road section located inland road from Malem to Yeseng connecting the two access routes							x	x	x							
Output 3.2 Intervention B: Transitional coast protection schemes (Mosral and Pal)																
Activity 3.2.1 Construct well engineered coastal wall defenses at Mosral and Pal road sections					x	x										
Component 4. Knowledge management and capacity development for improved understanding on climate change impacts on the coastal zones and enhanced involvement of stakeholders																
Output 4.1 Knowledge management plan covering all FSM beneficiaries to improve awareness levels and facilitate informed decision making to address risks to coastal zones and environment																
Activity 4.1.1 Prepare a Knowledge Management and Capacity Development Plan			x	x	x	x										
Output 4.2 Knowledge products for national use for all coastal communities pooled in and tailored to local contexts																
Activity 4.2.1 Materials and information captured, reviewed and shared systematically		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Activity 4.2.2 Technical modules, tools and training materials developed			X	x	x	x	x	x	x	x	x	x	x	x	x	
Activity 4.2.3 Key Performance Criteria and Indicators developed for staff and departments			x	x	x	x					x	x	x	x		
Output 4.3 Local and National Level Workshops, Learning & Trainings																
Activity 4.3.1 Learning & training workshops		x		x		x		x		x		x		x		x
Activity 4.3.2 Application and targeted technical workshops			x		x		x		x		x		x		x	

Appendix I - Terms Of Reference: Working Group For Malem Relocation Strategy

I. INTRODUCTION AND BACKGROUND

The Federated States of Micronesia is a developing country vulnerable to tropical storms, typhoons and drought, effects which are presently modulated by the El Nino Southern Oscillation. Future climate change is expected to increase the intensity and frequency of extreme rainfall events. Sea level is observed to be rising at 28-36mm/decade exacerbating coastal erosion and placing at risk human communities in coastal areas of atoll islands and islets.

Kosrae State is the eastern-most state in the Federated States of Micronesia (FSM), about 5 degrees north latitude and 163 degrees east longitude. With an area of 42.3 square miles, it is the second largest single island in the FSM (after Pohnpei). It is the southeastern-most state of the Federated States of Micronesia and is located 347 southwest of Kwajelein in the Marshall Islands, and 2,813 miles southwest of Honolulu. Kosrae State is made up of four municipalities known as Lelu, Malem, Utwe and Tafunsak. The Capital of Kosrae is Lelu and it is known that the island is the home of the sleeping lady.

Kosrae is a volcanic high island, roughly triangular in shape, associated with surrounding reefs. The reefs vary in distance from the shoreline from only a few hundred feet at some points to a mile in other places. Heavy rainfall has carved out eroded river valleys and deep-water harbors. Most of the interior of the island is rough and rugged, with Mount Finkol elevated at 2064 feet as Kosrae's highest point. Rainfall occurs throughout the year and yields about 180 inches on the East Coast and more than 250 inches in the west. The trade winds blow predominantly from the northeast. The mean annual temperature is about 80 degrees Fahrenheit year round.

The rugged interior makes up about 70 percent of the landmass. It is densely forested with native tropical vegetation. Outside the rugged interior are the lower hillsides and the flat areas. They are suitable for cultivation of citrus, breadfruit and bananas. The island is known for the fresh water swamps for raising the giant swamp taro. Mangrove swamps surround most of the island.

The population of Kosrae State increased from about 3,984 in 1973 to 7,317 in 1994 and to about 7,686 in the year 2000. The population by municipality in 2000 was 2,591 in Lelu, 1,571 in Malem, 1,067 in Utwe and 2,457 in Tafunsak.

On the 6 July 2015, following previous consultations in December in 2013 and later on in 2014, the community of Malem met with partners that included government stakeholders and SPREP as the regional representative, to discuss the priorities of the Adaptation Fund project proposal. The results of the consultations showed that all members of the community agreed to the investments that the project will undertake as priorities. That communities acknowledge these priorities were identified in previous consultations, and were also recommended under the priority measures of the Kosrae Shoreline Management Plan 2014. These investments include the following:

(A) New road section construction from Malem to Yeseng - plus access routes to the 2 villages

(B) Pal and Mosral rock revetment (wall, alongside coastline road)

The communities identified that with the increase in sea level rise, and their real-life experiences of the onset of frequent tidal surges that have threatened their coastline, noting the above mentioned developments, the community felt that a relocation plan and strategy for the municipal community of Malem was required. The community was clear that the implementation of this strategy follow the completion of the above mentioned investments.

In response, the Malem Municipal Government and representatives of the Kosrae State government discussed and agreed that a Working Group be established to develop this relocation strategy. The objectives should be inter alia, to address, control, manage, and develop a plan that will ensure

voluntary settlement for the Malem community population is in place. That the strategy plan be discussed as to when it can be implemented.

II. **OBJECTIVES**

This Terms of Reference is:

a) To establish a Working Group within the Adaptation Fund project tasked with formulating a Malem Relocation Strategy. It outlines the key tasks of the Working Group in developing the strategy;

b) To formulate an Malem specific set of guideline principles and processes for relocation;

c) To develop an action plan that will facilitate and support voluntary relocation options available for the population who wish to move inland from the current coastal settlement area.

III. GOAL

The strategy will guide the plans of the community and government to put in place measures that allow, assist, and support voluntary resettlement of the members of Malem municipality from the current coastal settlement to the inner road proximity. The inner road is the expected project product of the Adaptation Fund FSM project.

The Working Group may continue to act as the advisory body that will work closely with the communities, government, private sector (development banks for example) in ensuring activities of the Strategy are clarified, supported, updated, progressed.

IV. COMPOSITION OF WORKING GROUP

The key members that form up the Working Group include the representatives of Malem Municipal Government, the Land owners of the Malem-Utwe inner road areas (including parcel lands), Kosrae State Government, NGO representatives, Kosrae Women's Council representative, member of the private sector / business community or the Chamber of Commerce / Tourism representative, and the Kosrae Land Court. Any other interested stakeholder will be invited to attend and membership will be flexible at this stage of initial development.

V. SCOPE OF WORK

- Source, define and obtain agreement for the relocation strategy targets to be achieved with respect to climate change resilience and risk mitigation and the climate change risk scenarios to be considered;
- Discuss and agree as to the content of the Strategy that may include (background, rationale, climate risks, disaster risks, vulnerability, climate impacts, adaptation options, principles, targets, options, opportunities, risks, partnerships, action plan, recommendations)
- Develop a List of resources and information for accessing support. The list will be developed with partners (e.g., lending institutions, government, funding programs) and will be accessible to the people of Malem and to the Kosraean public.
- Carry out stakeholder consultations to gather information and views on proposed strategy
- Prepare strategy and share with partners
- Conduct high level stakeholder meeting to present and endorse the Malem Relocation Strategy

VI OUTPUTS

- Malem Relocation Strategy
- Action Plan
- List of Resources and Information for Accessing Support

- A summary of findings and recommendations on the issues, identifying weaknesses and malpractices.

Annex L Environment and Social Risks Management Plan

Methodology for Development of Environmental and Social Management Plan

Project/Programme Category:	REGULAR
Country/ies:	FEDERATED STATES OF MIRCONESIA
Title of Project/Programme:	ENHANCING THE CLIMATE CHANGE RESILIENCE OF VULNERABLE ISLAND COMMUNITIES IN FEDERATED STATES OF MICRONESIA
Type of Implementing Entity:	RIE
Implementing Entity:	SECRETARIAT OF THE PACIFIC REGIONAL ENVIRONMENT PROGRAMME
Executing Entity/ies:	OFFICE OF ENVIRONMENT AND EMERGENCY MANAGEMENT (OEEM) ON BEHALF OF KOSRAE STATE GOVERNMENT, POHNPEI STATE GOVERNMENT, YAP STATE GOVERNMENT, CHUUK STATE GOVERNMENT
Amount of Financing Requested:	US$8,967,600 (in U.S Dollars Equivalent)
AF Project ID:	

1.0 Methodology Aim

The aim of this methodology is to describe how the project would develop its Environment and Social Risk Management Plan.

The ESMP is presented here in Draft of this document with the following objectives:

- To assure that any environmental and social risks will be adequately and timely addressed in the project and that the changes required in the project design to address the risks warrants the highest level of commitment of the Executing Entity, the Implementing Entity with support and endorsement of the Project Board.
- To outline the risk mitigation measures that will be taken to ensure the project will be implemented and operated consistent with the Adaptation Fund's Environment and Social Policy Principles and in compliance with Federated States of Micronesia's existing laws and applicable regulations.
- To present monitoring and evaluation arrangements

2.0 Project Summary

FSM is particularly vulnerable to the impacts of climate change. It lies in the path of tropical storms, typhoons and droughts that are presently modulated by the El Nino Southern Oscillation. Future climate projections suggest, with very high levels of confidence that FSM will be adversely impacted by increased annual mean temperatures, and extremely high daily

temperatures (refer to summary of climate risks below). This is coupled with high confidence projections of more extreme rainfall events.

This vulnerability poses serious development challenges, especially for the remote low-lying island areas and atolls. The risks of flooding and inundation seriously threaten coastal sources of livelihood, infrastructure, including existing coastal protection structures. All communities and infrastructure in the atolls and low-lying coastal zones of volcanic islands are exposed to these risks and are therefore highly sensitive to sudden events. The absence of adaptation measures will mean that vulnerability of the communities will increase as the projected impacts of climate change increase over time.

3.0 FSM Climate Change Risks

The future for FSM does not look favourable for any development that is based on a business as usual approach. In the current period to 2100, according to PCCSP and PACCSAP (Australian BoM and CSIRO, 2011, 2014); the latest global climate model (GCM) projections and climate science findings for FSM indicate that:

- El Niño and La Niña events will continue to occur in the future (very high confidence), but there is little consensus on whether these events will change in intensity or frequency;
- Annual mean temperatures and extremely high daily temperatures will continue to rise (very high confidence);
- Average annual rainfall is projected to increase (medium confidence), with more extreme rain events (high confidence);
- Drought frequency is projected to decrease (medium confidence);
- Ocean acidification is expected to continue (very high confidence);
- The risk of coral bleaching will increase in the future (very high confidence);
- Sea level will continue to rise (very high confidence); and
- Wave height is projected to decrease in December–March (low confidence), and waves may be more directed from the south in June–September (low confidence).

4.0 Project Description

The overall goal of the project is to build social, ecological and economic resilience of the target island communities of FSM and reduce their vulnerabilities to sea level rise and other climate risks through coastal resource and development planning, and by promoting gender perspectives and ecologically sound climate resilient livelihoods.

The objective of the project is to strengthen the ability of FSM to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner. In achieving this objective, the project will support (at the national, state, island, municipal and sector levels) the implementation of the recently endorsed 2013 FSM Policy on Disaster Risk Management and Climate Change Adaptation.

The project will work with 7 village communities in 7 islands. Six of these communities are located in outer the islands of three of four states of FSM. The six communities are Woleai and Eauripik of Yap State, Satawan and Lukunor of Chuuk State, Kapingamarangi and Nukuoro of Pohnpei State. The seventh community is Malem municipal community on Kosrae island of Kosrae state. The identification of the coastal adaptation options of the village communities was carried out in close consultation with village communities. The project has been designed to be implemented over a five year period and will be implemented by a wide range of stakeholders including the communities themselves. It will be facilitated by each of four state government agencies but coordinated by the executing entity of the project based on the capital state island of Pohnpei, Pohnpei State.

5.0 Project Components

The project presents four components, namely, strengthening institutional capacity for coastal zone management; integrated approaches for coastal zone protection for Yap, Chuuk, and Pohnpei; Kosrae Shoreline Management Plan priority intervention measures; and knowledge management and capacity development for improved understanding on climate change impacts on the coastal zones and enhanced involvement of stakeholders.

Component wise project activities have been designed as follows:

Component	**Activities**
Component 1 Strengthening institutional capacity for coastal zone management	Activity 1.1.1 National and State Legal and Regulatory Policy assessment
	Activity 1.1.2 Review of regulatory inspection procedures, protocols and enforcement
	Activity 1.2.1 Review baseline data and information on coastal environment
	Activity 1.2.2 Assess the socio-economic and ecological developments of the coastal areas
	Activity 1.2.3 Draft the Shoreline Management Plan for each State and endorse at the highest level
	Activity 1.3.1 State specific Coastal Development Guidance Manuals produced
	Activity 1.3.2 State specific Environmental Policy Guidelines developed, reviewed and updated
	Activity 1.3.3 Endorse and adopt the Environmental

Component	Activities
	Policy Guidelines and Manuals
	Activity 1.4.1 Coastal Infrastructure Engineering Guidelines developed and applied
	Activity 1.4.2 Climate Resilient Roads Standards developed and applied
Component 2 Integrated approaches for coastal zone protection for Yap, Chuuk, and Pohnpei	Activity 2.1.1 Community inception and awareness workshops and Community/Island Development Plans developed for all six islands.
	Activity 2.1.2 Carry out environmental risk assessments
	Activity 2.1.3 Identification and demonstration of adaptive agriculture crops, water harvesting, and coastal marine resource management practices in each State
	Activity 2.1.4 Supply of agricultural inputs, water conservation equipment and marine management devices
Component 3 Kosrae Shoreline Management Plan priority intervention measures	Activity 3.1.1 Comply with EIA guidelines and 2013 Regulations for Project Developments
	Activity 3.1.2 Construct the access route inland from Malem
	Activity 3.1.3 Construct the access route inland from Yeseng
	Activity 3.1.4 Construct the new 2,000m road section located inland road from Malem to Yeseng connecting the two access routes
	Activity 3.2.1 Construct well engineered coastal wall defences at Mosral and Pal road sections
Component 4 Knowledge management and capacity development for improved understanding on climate change impacts on the coastal zones and enhanced involvement of stakeholders	Activity 4.1.1 Prepare a Knowledge Management and Capacity Development Plan
	Activity 4.2.1 Materials and information captured, reviewed and shared systematically
	Activity 4.2.2 Technical modules, tools and training materials developed
	Activity 4.2.3 Key Performance Criteria and Indicators developed for staff and departments
	Activity 4.3.1 Learning & training workshops
	Activity 4.3.2 Application and targeted technical workshops

6.0 Policy and Legal Context for Coastal and Island Resource Management

FSM Strategic Development Plan: The Strategic Development Plan (SDP) for FSM provides a road map for social and economic development for the 20 years 2004−2023. The SDP and the Infrastructure Development Plan (IDP) both recognise the need for mitigation and adaptation measures to limit the impacts of climate change. FSM developed a Multi-State Hazard Mitigation Plan in 2005, and in 2009 a national Climate Change Policy was adopted. The country developed a combined Policy for Climate Change Adaptation and Disaster Risk Management in 2013. This is being implemented through State Joint Action Plans for Climate Change and Disaster Risk Management. The Office of Environment and Emergency Management (OEEM) is the focal point for all government climate change activities.

Kosrae Strategic Development Plan 2013-2014: While each state has its own strategic development plan, Kosrae is the only State with a climate-responsive Strategic Development Plan (2013−2024). The SDP recognises that "the most prudent approach to addressing effects of naturally occurring events (climate change or disaster risks) long term would be to divert development and settlement along the coast to inland and higher grounds" (SDP 2013−2024, p. 29). The Environmental Results and Targets No. 6 states that by 2023 capacity is strengthened at all levels to climate change adaptation, and management and mitigation of risks of disasters enhanced so that communities are resilient to impacts of climate change and disaster risks. Resilience to climate change is also included within strategies for agriculture.

Kosrae Shoreline Management Plan 2014: FSM currently has no national strategy for coastal zone management. The State of Kosrae, however, is the first state to develop a strategic plan that addresses coastal zone management in view of the adverse impacts of climate change. Kosrae has a Shoreline Management Plan (SMP), first developed in 2000 and revised and updated in 2014 (Ramsay et al., 2014). The SMP sets out the principles for coastal development in Kosrae over the coming decades, and details eight key strategies for increasing the resilience of Kosrae's coastal communities. Taking on board lessons and practices from the Pacific Adaptation to Climate Change programme (PACC) and other coastal projects, this proposal aims to upscale and replicate lessons learned and best practices through guidance of these eight strategies of the SMP for Kosrae. **The eight key strategies are:**

(i) Continued development and strengthening of community awareness including outreach activities with a focus on effective natural coastal defence and Kosrae-relevant climate change impacts and adaptation options.
(ii) Amendment of the Kosrae Island Resource Management Authority (KIRMA) Regulations for Development Projects to incorporate climate change considerations and strengthening of regulation implementation to support successful long-term risk reduction and adaptation.
(iii) Over the next one to two generations the primary coastal road network and associated infrastructure currently located on the beach/storm berm is developed inland away from long-term erosion and coastal inundation risk.
(iv) Ensure new development (property, infrastructure) is located away from areas at risk from present and future coastal hazards or is designed with coastal hazards in mind.

(v) Implement a program to encourage existing residential property owners to reposition homes away from areas of high risk from present and future hazards. This may be a staged approach over time as homes are routinely replaced or renovated. Objective prioritization of properties most at risk should also be explored.

(vi) Incorporate a grant component in to the housing loan program to help encourage new property to be constructed in areas not exposed to coastal, river floor or landslide hazards.

(vii) Commence community and state discussions to develop a relocation strategy and identify potential approaches to support relocation from areas exposed to coastal hazards where no alternative land is available.

(viii) A strategic approach is adopted for the ongoing provision of coastal defences. These should be considered only where it is sustainable long-term option, or where it is accepted as a transitional approach to protecting areas over the short to medium term to enable relocation strategies to be implemented.

7.0 Kosrae's Environmental Impact Assessment (EIA) 2014

Kosrae's Constitution (1984), article 11Section 1 is the foundation of the State's environment, ecology and natural resources protection. It legalised the need to manage, protect and conserve the environment and natural resources. The Kosrae Island Resource Management Authority (KIRMA) was mandated to administer the systems that ensure the protection of the environment that would promote and support sustainable economic and social development of Kosrae.

The Kosrae State Code ensures the development permit system and EIA is established and supported by government regulations and plans. The Kosrae Land Use Plan (KLUP) 2003 acts as the strategic environmental assessment of Kosrae that explicitly considers environmental issues in relation to development and aims to:

- Assist with the orderly physical development of the resources of Kosrae;
- Protect ecologically important or unique natural resources and habitat areas;
- Assist with the review and permitting development projects; and
- Provide guidelines for the sustainable use of natural resources in development projects.

The Kosrae EIA process is *'intended to help project proponents and government decision-makers to make timely decisions about development proposals with an understanding of the environmental consequences of their respective actions or decisions, and to take actions consistent with the goal of protection, restoring and enhancing the environment.'* [1]

The process is participatory in that it allows for stakeholder participation, providing information about development proposals and allowing stakeholders to make comments about proposals.

The EIA process will be the main tool that will be used to implement the project's Environment and Social Risk Management Plan (ESMP). This includes a systematic approach to addressing all nine (9) steps of the EIA process including the monitoring and evaluation as the last and final step provided in Figure 1 below. Appendix II outlines the draft ESMP.

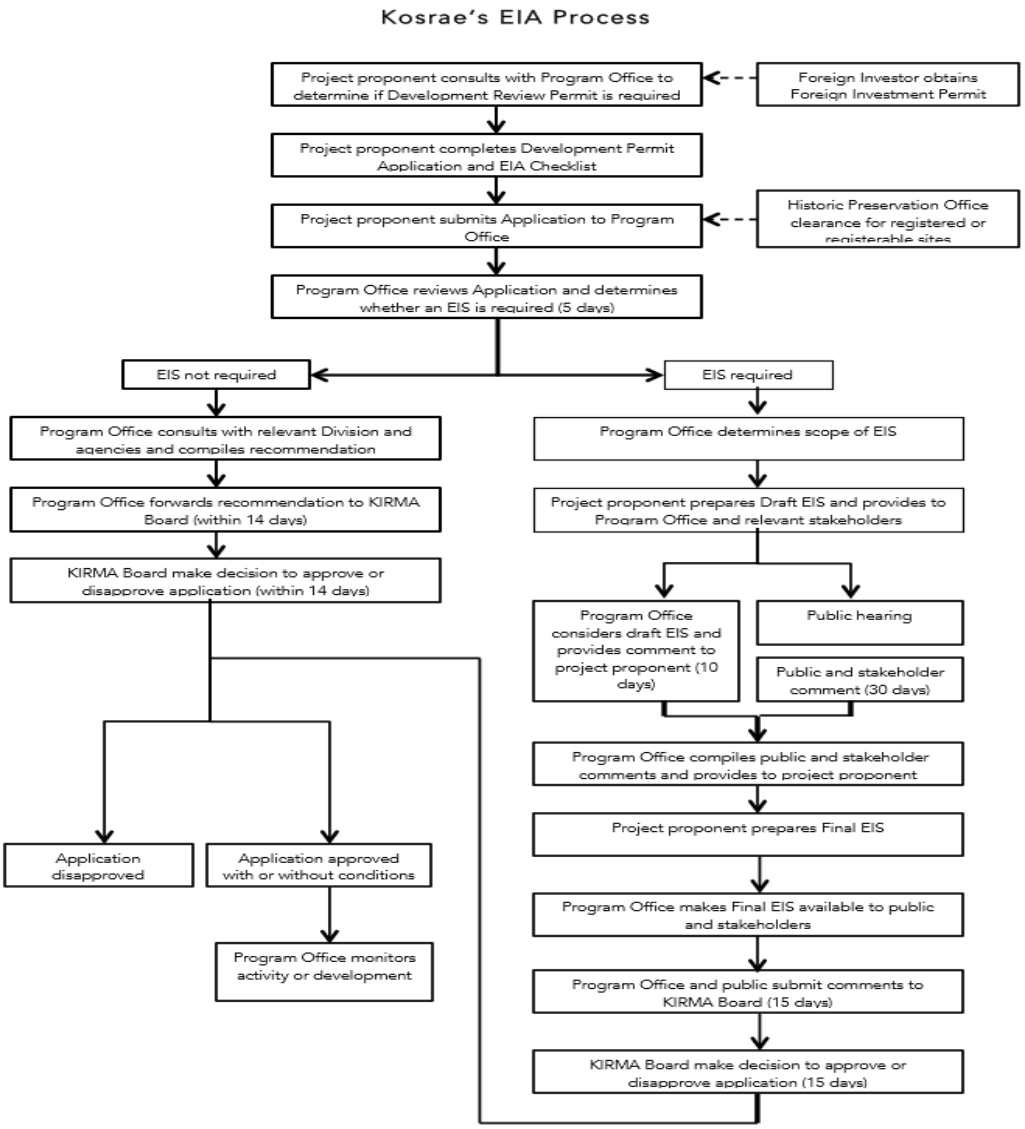
[1] KIRMA, 2014 Environmental Impact Assessment in the State of Kosrae, FSM 2014 (pp7)

The **Key screening and scoping** step of the project is an important step the follows the review of the project application. This will entail review of the social and environmental impacts of the project. The social and environmental impacts of the project screened and scoped from the project will be reviewed against plans, policies, laws and regulations of FSM and Kosrae; including plans and policies concerning development issues and impacts on the Kosraean environment are provided in the following Table 1

The project will then develop its own state project **Environment and Social Impact Assessment report** to compile its list of environment and social impacts and risks. The report will compile results from the screening and scoping process of the EIA. The format of this report is provided in Appendix 1 below. The EIA report is available online or emailed from simpsona@sprep.org

Table 1 FSM laws and regulations, plans and strategies for screening and social and environmental impacts

Laws and Regulations	Plans and Strategies
Constitution of the Federated States of Micronesia 1978	Kosrae Land Use Plan (2003)
Kosrae State Code (as amended)	Kosrae Solid Waste Management Plan (2010-2015)
Kosrae State Constitution (1984, as amended)	Kosrae State Biodiversity Strategy and Action Plan (2004)
Endangered Species Regulations (1988)	Kosrae State Land Policy: Draft for Consultation (Private Sector Development Programme Land Administration and Management Project), BGSI (2007)
Komokut (Humphead Parrot Fish) Protection Regulation (2008)	Kosrae Shoreline Management Plan: Summary of recommendations (2000)
Regulations for Development Projects (2005, as amended)	Kosrae Shoreline Management Plan: Repositioning for resilience (2013, *in draft*)
Regulations on Fill and Construction Projects Below the High Water Mark (October 2010)	FSM National Biodiversity Strategy and Action Plan (2002)
Sanitary Pig Pen Regulations (1997)	
SCUBA Fishing Regulations (2010)	
Pesticides Regulations (2013)	
Pollution Regulations (2013	



- **Figure 1 EIA Process (source: Kosrae EIA Guidelines 2014)**

1. Project Description

1.1 Description of the proposed operation
1.2 Maps and diagrams of the project site
1.3 Area that will be affected and impacted
1.4 Settlements that will be affected
1.5 Population that will be affected (attach list of households, list sex-disaggregated)

2. Baseline Condition

2.1 Description of existing environmental and social condition
2.2 Attach maps and other data that has been collected

3. Impacts and Risks

Environment Impacts and Risks
The assessment will be in terms of (a) Potential Environmental Risks; (b) Potential Environmental Impacts; (c) Identified Environmental Risks; and (d) Identified Environmental Impacts on the following issues.

3.1 Species and Habitats
3.2 Bio diversity
3.3 Soil Erosion
3.4 Water Quality
3.5 Soil Disposal
3.6 Water Resources
3.7 Waste Disposal
3.8 Physical and Cultural Infrastructure

Social Impacts and Risks

The assessment will be in terms of (a) Potential Social Risks; (b) Potential Social Impacts; (c) Identified Social Risks; and (d) Identified Social Impacts on the following issues.

3.9 Vulnerable Groups
3.10 Access and Equity
3.11 Labour Rights
3.12 Human Rights
3.13 Gender and Women Empowerment
3.14 Involuntary Resettlement

4. Analysis of Alternatives

Description of alternatives that were identified and their assessment in terms of:

(a) Direct and Indirect Environment and Social Impact
(b) Opportunities for enhancing environmental and social benefits

5. Recommendations

Risk Management options in terms of:

(i) Preventing Risk
(ii) Avoiding Risk
(iii) Mitigating Risk
(iv) Transferring Risk
(v) Absorbing Risk

6. Process Note for the preparation of ESIA

6.1 Consultations held with different stakeholders in the community
6.2 Consultations held with women
6.3 Consultations held with technical working group (state level)

The ESMP is set out in 5 sections and which include the monitoring, reporting and evaluation plans. The following is a draft plan that aims to guide the project in addressing the social and environmental risks during implementation and monitoring stages. The project would develop a fully fledge plan in the full project preparation stage

Environment And Social Risks identified in ESIA	**Mitigation Measure**	**Implementation Schedule for the mitigation measure**	**Responsibility for execution of the mitigation measure**
Species and Habitats Environment risks include pollution and contamination affecting species and their habitats	The KSC contains the following prohibitions: (i) Littering (19.502); and (ii) Wilful or negligent discharge of pollutants (19.504). KSC Chapters 5 and 6 regulate hazardous wastes and waste management, including the banning of certain hazardous substances (POPs), and create a recycling program for certain materials. The Pollution Regulations require reporting of pollution incidents, create a number of pollution offenses, and require the polluter to mitigate the spill. The Endangered Species Regulations provide for the protection of four species of Giant Clams PREVENTATIVE MEASURES on declining marine resources and habitat destruction: (1) KBSAP includes the following actions:	Prior to and during implementation	• Kosrae Island Resource Management Authority (KIRMA) • Environment Protection Agency - Chuuk, Pohnpei, Yap • SPREP, SPC Community research partners: Ulithi Marine Conservation Department of Biology at Cabrillo College in Aptos, California University of California, Santa Cruz Santa Barbara City College in Santa Barbara, CA

	(i) Ban the use of poisonous chemicals such as bleach, cyanide, local plant roots (*Derris trifolia*), leaves (*Canti cands*) and other destructive fishing methods as in the use of dynamite and electrocution devices (ii) Ban the use of modern fishing equipment and devices such as SCUBA gear; (iii) Ban the use of gill nets with a mesh size of less than approximately one (1) inch; (2) KSC requires the issuing of a permit for: (i) Fishing from foreign fishing vessels (19.305); (ii) Other fishing (19.306); (iii) Import and export of fish or other marine resources (19.306); (iv) Aquaculture (19.306); (v) Marine research (19.306). (3) KSC prohibits the following: (i) Commercial fishing by a foreign fishing vessel in inland waters (19.316); (ii) Commercial fishing in State fishery zone without State permit (19.317); (iii) Development or activity that may affect environmental quality of fishery water without environmental approval (19.321); (iv) Contamination of fishery waters (19.324); (v) Damage to reef by dredging, mining, removing coral or rocks, or grounding a vessel (19.326); (vi) Use of drift nets in fishery waters (19.326); (vii) Use of poison, explosive, electric		

	charge device or other substances to kill, take, stun, immobilize or in any way render fish more easily caught (19.328);		
Bio diversity Environment risks include	KSC imposes the following prohibitions: No fires in mangrove, upland, wetland or watershed forests without authorization (19.805(2)); No in-fill of mangrove areas without authorization (19.806(2)); No development in 30m buffer along rivers and streams upstream of dams in watershed forests (19.8071)); and No earthmoving or clearance of vegetation in watershed forest with slope of 30% or greater (19.807(2)). Several regulations provide for the protection of endangered or vulnerable species, as well as prohibit the use of certain methods of harvesting marine species: The Endangered Species Regulations provide for the protection of four species of Giant Clams; The Komokut Protection Regulations provide for the protection of the Humphead parrot fish; The SCUBA Fishing Regulations prohibit the use of SCUBA equipment when taking fish.	Prior to and during implementation	• Kosrae Island Resource Management Authority (KIRMA) • Environment Protection Agency - Chuuk, Pohnpei, Yap • SPREP, SPC Community research partners: Ulithi Marine Conservation Department of Biology at Cabrillo College in Aptos, California University of California, Santa Cruz Santa Barbara City College in Santa Barbara, CA Public Safety
Soil Erosion Environmental impacts such as	(1) State-Wide Assessment of Resources and Strategies (SWARS), utilizing the Kosrae Soils Survey, recommends that vegetation	Prior to and during implementation	KIRMA DREA KCSO

<table>
<tr>
<td>erosion and loss of soil fertility from output 3.1a nd 3.2
activities that include
• Quarrying or extraction
• Compaction
• Bulldozing:
• Vegetation clearance
• Disposal or dumping of solid waste and other hazardous substances:</td>
<td>clearance from soil types with high to very high erosiveness should be avoided. The clearing of vegetation and general disturbance of these soils will lead to the instability of the soils and may cumulatively result in loss of fertility and functions, leading to excessive erosion and land degradation. These soil types are:

<table>
<tr><th>Soil #</th><th>Soil Name</th><th>Erosiveness</th></tr>
<tr><td>100</td><td>Dolen Silty Clay Loam</td><td>High</td></tr>
<tr><td>101</td><td>Fomseng Gravelly Silty Clay Loam</td><td>High</td></tr>
<tr><td>102</td><td>Finol Very Gravelly Silty Clay Loam</td><td>High</td></tr>
<tr><td>103</td><td>Fomseng Gravelly Silty Clay Loam</td><td>Very high</td></tr>
<tr><td>112</td><td>Oatuu-Fomseng Complex</td><td>Very high</td></tr>
</table>

The Soil Maps of Kosrae are available from KIRMA’s GIS Unit.
(2) KLUP recommends the following prohibitions in watershed areas:
(i) No development activities in areas with slope greater than 30 percent; and
(ii) Adoption of special construction techniques on projects involving earthmoving and landscaping to minimize erosion.
Best practices:
(i) Contours and diversion channels may be</td>
<td></td>
<td></td>
</tr>
</table>

	appropriate on steeper slopes to minimize erosion while still allowing use of arable land. (ii) The promotion of agroforestry techniques provides for retention of over-storey trees and ground cover, while allowing rotation planting of mid-storey and ground crops. (iii) Use of sediment traps and silt screens minimizes erosion and outflow of sediment.		
Coastal and Marine Resources Particular to this project and to FSM, the environment risks and impacts identified here include**:** Landfilling of coastal areas, extraction of sand and cobbles, and clearance of coastal vegetation and mangroves	IMPACT PREVENTATIVE MEASURES: On coastal erosion: (1) The KLUP recommends the following prohibitions in relation to coastal mangroves: (i) All development projects within mangrove areas shall adhere to the EIA process; (iii) Clear cutting of mangroves should be prohibited; (iv) No harvesting of seaward fringe mangroves; (v) No harvesting of mangroves between the road and shore if the strip is less than 50 meters wide; (vi) No cutting of mangroves within 15-30 meters of any river or stream less than 3 meters across; (vii) No cutting of mangroves within 30 meters of the shoreline or within 15 meters of mangrove channels; and (viii) No diversion or restriction of flow of fresh or marine waterways. (2) The KLUP recommended the follow prohibitions for shoreline erosion hazard areas: (i) All development proposals within a 30	Prior to and during implementation	KIRMA DREA Public Safety KCSO

	meter buffer zone of a hazard area shall adhere to the EIA process; (ii) In order to protect the inner portion of the reef flat and shoreline, coral boulders and live corals should not be removed; (iii) No new structures should be sited in areas experiencing severe erosion; (iv) Construction of seawall or other forms of coastal defences for private use should be prohibited; (v) Vegetation clearance should be discouraged for at least 50 meters behind the vegetation line; (vi) All development projects within 30 meters from the beach berm should be discouraged; and (vii) No permits should be issued for the mining of beach sand. (3) The KSMP (2013, draft) recommends the following: (i) Continued development and strengthening of community awareness and outreach activities with a focus on an effective natural coastal defence and Kosrae-relevant climate change impacts and adaptation options; (ii) Relocation of the primary coastal road network and associated infrastructure currently located on the beach/storm berm away from areas at risk from present and future coastal hazards; (iii) Ensure new development is located away from present and future coastal hazards; (iv) Incorporate a grant component in the housing loan program to help encourage new property to be constructed in areas not exposed to		

	coastal, river flood or landslide hazards.		
Water Quality Environment impacts include pollution and contamination	IMPACT PREVENTATIVE MEASURES (1) KBSAP Objective 4 seeks to minimize waste contributing to the pollution of the environment, with: (i) Action 4: prevent unsafe discharge of hazardous chemicals on land and in aquatic areas; (ii) Action 5: prevent dumpsites in mangrove and swampy areas. (2) KSC establishes the following prohibitions: (i) No disposal of liquid or solid waste in the Protected Areas System (19.805(1)); (ii) No littering (19.502); (iii) No fouling of public rivers and public water supply (19.503); (iv) No willful or negligent discharge of pollutants (19.504). (3) Pollution Regulations create positive reporting requirements for pollution incidents, require polluters to mitigate and remedy the impact of pollution incidents, and create a range of offenses for materials and serious pollution. IMPACT MINIMIZATION MEASURES (i) Promote backyard composting to minimize biodegradables from entering the waste stream; (ii) develop waste collection guidelines; (iii) continue waste awareness and	Prior to and during implementation	KIRMA DREA KCSO

	promotional programs; and (iv) Increase capacity to enforce littering and pollution laws.		
Soil Disposal Risks to the environment from the project include disposal or dumping of solid waste and other hazardous substances: the inappropriate dumping of solid waste and other hazardous substances introduces potential contaminants to the soil, which may impact soil biota, as well as surface and ground water.	IMPACT PREVENTATIVE MEASURES (1) KLUP recommends that the use of chemicals, fertilizers and pesticides be prohibited on private agricultural lands in watershed areas. (2) KSC contains the following pollution prohibitions: (i) Littering (19.502); and (ii) Wilful or negligent discharge of pollutants (19.504). (3) The Persistent Organic Pollutants Act provides for the banning of POPs substances and the introduction of controls around other hazardous substances. (4) The Pesticides Regulations introduce controls on the use of restricted use pesticides so as to ensure their proper use and minimize detrimental impacts on the environment and human health. Best practices: (i) Recycling and waste minimization strategies have been introduced, with some success (ii) Community-led clean ups of marine and terrestrial areas are conducted regularly IMPACT MINIMIZATION (1) KBSAP Objective 4 seeks to minimize waste contributing to the pollution of the environment, with:	Prior to and during implementation	KIRMA DREA KCSO

	(i) Action 4: prevent unsafe discharge of hazardous chemicals on land and in aquatic areas; and (ii) Action 5: prevent dumpsites in mangrove and swampy areas.		
Water Resources Environment impact and risks identified include loss of forests / vegetation cover, alteration of flow of rivers and streams, pollution and contamination	IMPACT PREVENTATIVE MEASURES: (1) The KLUP recommends the following prohibitions in watershed areas: (i) Development buffer of 15 meters from each side of rivers in watershed areas above municipal dams; (ii) No clearing of land or removal of forests in public watershed areas; (iii) No clearing of land with a slope greater than 30 percent; (iv) No use of fire to clear vegetation; and (v) No use of chemicals and pesticides on agricultural lands. (2) The KLUP recommends a development buffer of 30 meters from the coastline. (3) KSC establishes the following prohibitions: (i) No fires in mangrove, upland, wetland or watershed forest without authorization (19.805(2)); (ii) No harvest of trees or other plants from State owned forests (19.805(3), 19.806(1), 19.809); (iii) No in-fill of mangrove areas without authorization (19.806(2)); (iv) No development in 30 meter buffer along rivers and streams upstream of dams in watershed forests (19.807(1)); (v) No earthmoving or clearance of	Prior to and during implementation	KIRMA DREA KCSO

	vegetation in watershed forests with slope of 30% or greater (19.807(2)). (1) The KLUP recommends the following: (i) A 15 meter buffer zone on both sides of the mouth of a river where development is prohibited; and (ii) No changes in the outflow or alignment of rivers. (4) KBSAP Objective 4 seeks to minimize waste contributing to the pollution of the environment, with: (iii) Action 4: prevent unsafe discharge of hazardous chemicals on land and in aquatic areas; (iv) Action 5: prevent dumpsites in mangrove and swampy areas. (5) KSC establishes the following prohibitions: (v) No disposal of liquid or solid waste in the Protected Areas System (19.805(1)); (vi) No littering (19.502); (vii) No fouling of public rivers and public water supply (19.503); (viii) No willful or negligent discharge of pollutants (19.504). (6) Pollution Regulations create positive reporting requirements for pollution incidents, require polluters to mitigate and remedy the impact of pollution incidents, and create a range of offenses for materials and serious pollution. IMPACT MINIMIZATION MEASURES To minimize erosion and sedimentation in		

	watershed areas, (1) The KLUP recommends the use of: (i) Special earthmoving, landscaping and construction techniques to minimize erosion in watershed areas; (ii) An erosion and sedimentation plan for all road construction proposals in watershed areas. (2) The Kosrae Soils Survey recommends: (i) Activities on areas with slope of 15 degrees or more should be restricted to minimal tillage, use terraces, diversions and contouring, and use close-growing grass and crops to minimize erosion and sedimentation; and (ii) A prohibition on the growing of crops on areas with slopes of 16 to 30 percent. Best practices: (i) The use of buffer zones along rivers, streams and mangrove areas; (ii) The use of silt curtains / screens to minimize inflow of sedimentation; and (iii) Restrictions on earthmoving activities during rainy days. To minimize pollution and contamination from the works: (1) The KSWMP aims to: (i) Promote backyard composting to minimize biodegradables from entering the waste stream; (ii) To develop waste collection guidelines; (iii) To continue waste awareness and promotional programs; and		

	(iv) Increase capacity to enforce littering and pollution laws. (v) Develop an erosion and sedimentation control plan for all earthmoving activities		
Access and Equity Key social impact issues identified include: Land use / lease process, Unplanned and uncontrolled development, Land disputes / boundary conflicts	Existing relevant policies, regulations and future policy need The Regulations for Fill and Construction Below the High Water Mark, administered by DREA, require the acquisition of a lease or land use agreement before an adjoining landholder can undertake activities in areas below the ordinary high water mark. (1) The KLUP establishes "active use districts", "special consideration districts" and "areas of particular concern" that provide guidance about the types of activities that are suitable in different areas. Each of these districts is accompanied by recommendations that aim to minimize negative impacts on the surrounding environment. (2) The Regulations for Development Projects require development project review permits for certain types of activities or projects and establish an EIA process. The conditions attached to the permits aim to minimize negative impacts on the environment. **Best practices:** (i) The KLUP is due for revision in 2014 and to be released in late 2015. The identification and mapping of zones and clear prescriptions for	Prior to and during implementation	KIRMA DREA Land Court

	development and activities in each zone will assist in effectively managing the available area of productive and "developable" land.		
Labour Rights	With reference to Section II.K, the draft ESMP will be developed during the full project preparation stage		
Human Rights			
Gender and Women Empowerment			
Involuntary Resettlement			
Physical and Cultural Infrastructure			
Vulnerable Groups			

(2) Consultation and Public Disclosure

The plan for consultation and public disclosure of the ESMP will be recorded here. The plan will be for:

(a) Consultations for preparation and implementation of ESMP
(b) Consultation with women and youth of the village community
(c) Notification to village community when will the activities be implemented
(d) Disclosure of Monitoring and State (sub) Project Completion reports

(3) Monitoring Plan

The following monitoring plan matrix will comprise of the parameters for monitoring and the frequency with which the monitoring will be carried out. The recording and reporting procedures will also form part of the monitoring plan.

Mitigation Measure	**Monitoring Parameter**	**Responsibility for monitoring**	**Recording and Reporting Frequency**
Species and Habitats			
Bio diversity			

Soil Erosion			
Water Quality			
Soil Disposal			
Water Resources			
Physical and Cultural Infrastructure			
Vulnerable Groups			
Access and Equity			
Labour Rights			
Human Rights			
Gender and Women Empowerment			
Involuntary Resettlement			

A number of natural resource assessments have been undertaken in Kosrae, and there are also ongoing routine monitoring programs in some areas, such as the coral monitoring program. Together these provide baseline information about Kosrae's physical environment and ecological resources. Table 2 (below) provides a summary of these assessments and programs.

Table 2: Summary of Resource Assessments and Monitoring Programs

Assessment / Program	***Details* coastal sites to**
Kosrae Soils Survey 1983 (USDA Soil Conservation Service)	• Identified soil types across the island and prescribed management recommendations according to erosion risk
State-wide Assessment and Resources Strategy 2005 (USFS)	• Identifies highest priorities for forest resource management • Provides an analysis of forest conditions and trends and delineate priority rural and urban forest landscape areas • Provides long-term strategies for managing priority landscapes
Beach Profiling Project	• Six monthly monitoring of selected coastal sites for erosion impacts

(KIRMA)	
Coral Monitoring Program (KIRMA and KCSO)	• Quarterly and annual monitoring of selected sites for coral health, invertebrates, and fish species
Forest Health Monitoring Program (KIRMA)	• Quarterly monitoring of control plots for growth, health and invasive species • Monitoring of mangrove health, replacement and forest gaps
Erosion and Sedimentation Monitoring (KIRMA)	• Monitoring of erosion and sedimentation in stream flows at Okat (Yela River as control), Lelu and Utwe
Marine Protected Areas Management Plans (Municipal Resource Management Committees)	• Regular monitoring of biological indicators such as turbidity, as well coral and fish

(4) External Audit and Verification

The project will include a plan for carrying out an independent environment and social audit within the monitoring and evaluation plan overall.

4.1 Conduct of Environment Audit
4.2 Conduct of Social Audit
4.3 External Verification processes

(5) State Project ESMP Completion Report