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## PROGRAMME PROPOSAL

### PART I: PROGRAMME INFORMATION

PROGRAMME CATEGORY: Regular  
COUNTRY: Samoa  
TITLE OF PROGRAMME: Enhancing resilience of coastal communities of Samoa to climate change (UNDP ID 4667)  
TYPE OF IMPLEMENTING ENTITY: MIE  
IMPLEMENTING ENTITY: United Nations Development Programme (UNDP)

EXECUTING ENTITY: Ministry of Natural Resources and Environment (MNRE)

AMOUNT OF FINANCING REQUESTED: US\$8,732,351

### PROGRAMME BACKGROUND AND CONTEXT:

#### *Pacific Climate Change Setting*

1. The Pacific region is home to twenty-two Pacific island countries and territories. This large ocean of many small islands spreads over almost 20 million square kilometres, and hosts a population of approximately 9.5 million. This is expected to increase by 50% by 2030 as the annual growth rate is around 1.9 percent per year. Although the Pacific region is geographically, culturally and economically diverse, all Pacific Island countries share a common feature of being highly vulnerable to the impacts of climate change due to their social, institutional and economic characteristics, including small size, food and water insecurity, limited economics of scale and isolation from markets, dependence on import foods and fuels, relative poverty and growing urbanisation, fragile ecosystems and susceptibility to natural disasters.
2. The Pacific region is prone to natural disasters, most of which are weather- and climate-related, with flood, storms and wave surges associated with tropical cyclones being the predominant causes. It is considered to be one of the region's most at risk to the adverse consequences of climate change (IPCC, 2007). Pacific Island countries have contributed little to the causes of anthropogenic climate change. But they are among the most vulnerable, being least able to adapt to its effects. The majority of people in the Pacific live in rural areas and are dependent on local natural resources and ecosystems for their food, water, shelter and livelihoods. Livelihoods

are primarily subsistent, and in many cases communities are already highly vulnerable to droughts, floods and other natural disasters. Limited access to markets, government services and transport infrastructure further reduces community resilience to external shocks and stresses

3. Most Pacific Island countries are located in tropical and sub-tropical regions with warm year-round temperatures and high to moderate rainfall. Extremes of rainfall, temperature and tropical storms pose significant risks. The key climate-related hazard risks include flooding, drought and wind/storm surges from tropical cyclones. It is estimated that on average, between 7-8 cyclones per year occur in the Pacific region.
4. Disaster losses can represent a major portion of gross domestic product (GDP) for Pacific Island countries, and thus seriously impede economic and social development. However, the economic impacts of climate change and the costs of adaptation have yet to be assessed comprehensively at the regional and country level in the Pacific to inform national development strategies and investment decisions. The recent Economics of Adaptation to Climate Change (EACC) Samoa Country Study is a notable exception and is proving invaluable for preparation of this proposal.
5. All available evidence points to a combination of natural variability and global warming resulting in a substantially higher number of extreme weather events in the foreseeable future. It is unclear if the recent and ongoing progress in disaster management, and especially in disaster-risk reduction, will be sufficient to protect people and property from a future increase in the number of potentially disastrous events brought about by a combination of climate variability and change.
6. IPCC (2007) and others are projecting that the Pacific region will experience the following changes in the climate:
  - Sea-level rise of 0.19 - 0.58 m by 2100, resulting in accelerated coastal erosion and saline intrusion into freshwater sources;
  - Surface air temperature increases of 1 – 4°C in the northern Pacific and 1 - 3°C in the southern Pacific by 2070, with associated increases in sea surface temperature of 1 – 3°C;
  - Acidification of the ocean through increased absorption of CO<sub>2</sub>, causing pH to drop by an estimated 0.3 - 0.4 units by 2100, and impacting adversely on coral growth rates;
  - Rainfall increases or decreases from -3% to +26% in the northern Pacific, and -14% to +15% in the southern Pacific, causing worse floods or droughts; whilst there are relatively large uncertainties in rainfall projections for the Pacific region, much of the systematic change is likely to be associated with increased El Niño-like conditions; the consequences of such changes are more predictable for local areas as they can be based on previous responses to El Niño-like conditions; and
  - Tropical cyclones becoming more intense, with increased peak wind speeds and higher mean and peak rainfall.

### ***Samoa Geography***

7. Samoa is a small island country in the southwest Pacific, comprised of four inhabited islands and six smaller, uninhabited islands of volcanic origin. Samoa has a total land area of around 2,900 km<sup>2</sup>. Samoa's two main islands, Upolu and Savai'i, are characterised by a rugged and mountainous topography. Around 46% of Upolu and

70% of Savai'i's total land area is covered by forest. Approximately 80 per cent of the 403 km coastline is "sensitive" or "highly sensitive" to erosion, flooding or landslip.



## Economy

8. Samoa is a small, fairly liberalised economy, with a GDP of around USD \$613 million. It is reliant on foreign imports and has a large trade deficit. Samoa is one of the world's 48 Least Developed Countries (LDCs).
9. Samoa's economy has traditionally depended on development aid, family remittances from overseas, agriculture and fishing. Samoa is one of the highest recipients of remittances in the world, as a proportion of GDP. Only around 12% of Samoa's total population is engaged in formal paid employment. Two-thirds of Samoa's potential labour force is absorbed by subsistence village agriculture, a dominant sector in the Samoan economy. However, much of this labour force has been lost to emigration. Agriculture furnishes 90% of exports, mainly coconut cream, coconut oil and copra. Tourism is an expanding sector, and now accounts for 25 per cent of GDP; 122,000 tourists visited Samoa in 2007. Private sector growth is constrained by a narrow resource base, limited infrastructure, isolation, dependence on fuel imports, a lack of skilled labour, and a small domestic market.
10. The Samoan economy showed generally strong economic growth from 2002 to 2007. Real growth rates in total GDP were 3.2% in 2002, 5.6% in 2003, 4.6% in 2004, 5.2% in 2005, 0.5% in 2006 and 6.6% in 2007. These positive growth rates translated into real per capita income in excess of the LDC status of US\$900 during the same period. However, recent overall economic performance has been unfavourable, with real GDP contracting by 3.2% and 1.8% in 2008 and 2009, respectively.
11. Samoa depends upon imported petroleum products for much of its energy needs. About 95% of the Samoan population has access to electricity. The Government's objective is to change Samoa's reliance on fossil fuels to a low carbon economy by 2020. The Samoan Government endorsed the National Energy Policy in 2007. It

encourages the use of renewable energy sources such as solar, wind, coconut oil, hydro and energy from wastes. Currently Samoa generates up to 50% of its electricity from hydro power plants, but the reliability of this energy source is being increasingly compromised by prolonged droughts.

12. Fisheries are critical both for commercial purposes and the sustenance of the populace. According to the 2005 agricultural survey, a total of 5,060 households harvest fish, with 77% consuming all that they catch while 23% sell their surplus at market. As noted above subsistence agricultural activities are critical to the support of families, which together with fishing are both activities at risk from CC.

## **Population**

13. The 2006 census estimated 180,741 persons in Samoa. Between 70 and 80 per cent of the population live on or near the coast. Over 50% of Samoa's population live in the Apia urban area and northwest Upolu, an area of 311 km<sup>2</sup>, or 11% of the total land area. This has significant development implications for social and economic infrastructure, as well as increasing social concerns given the growing number of people residing outside traditional village settings and the associated social governance of different village groups.
14. Of the 2006 population 76% were in Upolu and 21% in Savai'i. The population is relatively youthful, with 37.6 per cent between the ages of 0 and 14 years, 56.7 per cent of the population between 15 and 64 years and only a small proportion of 5.7 per cent over 65 years. The median age is 20.8 years. This youthfulness is reflected in high fertility rates (4.16 children born per woman). There are more males than females (1.06:1.00) and life expectancy is just under 72 years. The majority (92.6%) of the population is of Samoan ethnicity.
15. The population of Samoa is estimated to have grown at a rate of 0.3 - 0.9%, per annum between 1971 and 2007. Between 2000 and 2005 the population grew by 0.97%, while the urban population grew 3.2%. Since Samoa's independence in 1962 significant levels of emigration have slowed the overall rate of population growth, with a net migration rate estimated to be 1.6–2.2% per annum.

## **Samoa's Climate**

16. Samoa's climate is characterised by high rainfall and humidity, near-uniform temperatures throughout the year, the dominance of south-easterly trade winds and the occurrence of tropical cyclones. The latter are most common between December and February. Figure 1 shows that Samoa is in a zone of high cyclone frequency, with on average five cyclones with maximum wind speeds in excess of 250 kph occurring in any ten year period. The south-easterly trade winds are directly associated with the meridional migration of the South Pacific Convergence Zone (SPCZ). The SPCZ is typically located north of the Samoan group in winter, but moves south of Samoa during the summer. The south easterlies prevail in winter months while the wind direction becomes more variable during summer. The close proximity of the SPCZ to Samoa during summer results in the winds being generally stronger than in winter.

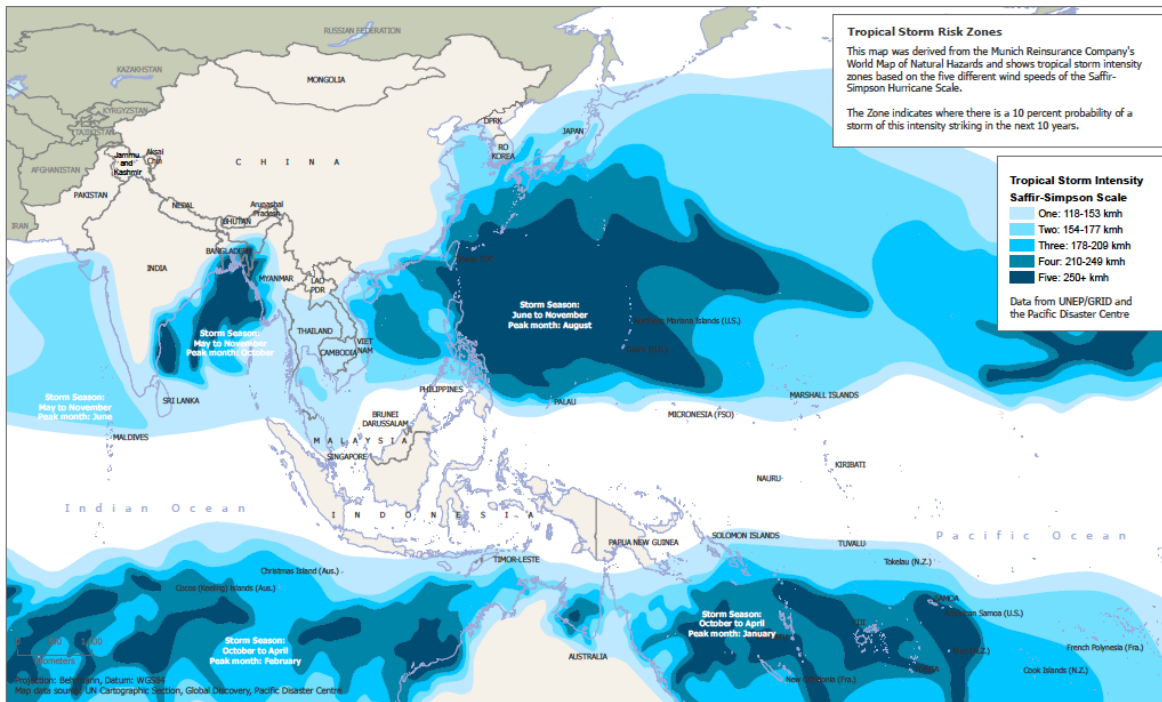


Figure 1. Tropical storm risk zones for the Pacific. Source: OCHA (2006).

25. Samoa has two seasons, marked by significant differences in rainfall. The annual rainfall is about 3,000 mm, with about 75% of the precipitation occurring between November and February. Samoa's topography has a significant effect on rainfall distribution. Because of the predominant easterly wind, the mountain ranges determine the distribution of rainfall. Wet areas are generally those located in the southeast and the relatively drier areas are located in the northwest of the main islands. Samoa is also vulnerable to anomalously long dry spells that coincide with the El Niño conditions.

26. A review of historical climate trends for Apia suggests that the daily maximum temperature increased by about 0.7°C over the 20th century while the daily minimum temperature increased by 0.2°C. Average annual precipitation decreased by about 49 mm over that century.

### Climate Change Projections & Scenarios

27. Samoa's Second National Communication to the United Nations Framework Convention on Climate Change reports best estimates of long term, systematic changes in the future climate for Samoa. They indicate that by 2050 sea level is likely to have increased by 36 cm, rainfall by 1.2%, extreme wind gusts by 7% and maximum temperatures by 0.7 C. The observed long-term trend in relative sea level for Apia is 5.2 mm/yr. But maximum hourly sea level is increasing by approximately 8 mm/yr, a rate far in excess of the observed local and global trends in mean sea level. For Apia an hourly sea level of 1.8 m above mean sea level is currently a 100-year event. It will likely be at least a four-year event by 2025.

28. No significant long-term trends are evident in the observed daily, monthly, annual or maximum daily rainfall for Apia. Currently a daily rainfall of at least 300 mm is a

relatively rare event at Apia, with a return period of 14 yr. Given Samoa's location, there is large uncertainty in the rainfall projections. Of the four global climate models used to prepare Samoa's climate risk profile, two models indicated substantial increases in rainfall, one model suggested only small increases, and one model indicated a large decrease in rainfall into the future. While, an extreme daily rainfall of 400 mm is currently a 60-year event, it will likely be a 40-year event by 2050. An extreme six-hourly rainfall of 200 mm is currently a 30-year event. It will likely become a 20-year event by around 2050.

29. Currently an extreme wind gust of 70 kt at Apia has a return period of 75 years. This will reduce to approximately 40 years by 2050. There is relatively high confidence in projections of maximum air temperature. A maximum air temperature of 34 C is currently well in excess of a 100-year event. By 2050 it will likely have a return period of 40 years.
30. More recently, the EACC Samoa country study used projections of climate variables downscaled from the results of the global climate models. Samoa is covered by 4 of the 0.5° grid cells. Most of the Samoan population is covered by the cell centred on 13.75°S, 171.75°W, which covers Apia. As shown in Table 1, the Global Wet (NCAR) and Dry (CSIRO) scenarios differ little with respect to the annual average temperature projections. The Global Wet scenario projects an increase of 0.97-0.99°C by 2050 for the four grid cells, while the Global Dry scenario for 2050 projects an increase of 0.81-0.83°C by 2050 for the four grid cells. Since the differences between cells are much smaller than the standard errors of the projections,
31. It is reasonable to assume a uniform increase of about 1°C for the Global Wet scenario and about 0.8°C for the Global Dry scenario. Changes in average daily maximum and daily minimum temperatures are almost identical to the changes in average daily mean temperatures.

**Table 1 - Projected Changes in Climate Variables by GCMs and Grid Cell**

Changes in climate variables in 2050 relative to baseline

GCM	Cell latitude	Cell longitude	Samoa region *	Total precipitation (mm)	Precipitation Dec-Feb (mm)	Precipitation Nov-Apr (mm)	Mean temp (°C)	Max temp (°C)	Min temp (°C)
NCAR	13.75 S	172.75 W	SN	-17	-39	5	0.99	0.99	0.99
NCAR	13.75 S	172.25 W	SS	-19	-41	3	0.99	0.99	0.99
NCAR	13.75 S	171.75 W	UN	-21	-42	0	0.99	0.99	0.99
NCAR	14.25 S	171.75 W	US	106	-8	118	0.97	0.97	0.97
CSIRO	13.75 S	172.75 W	SN	277	43	197	0.81	0.81	0.81
CSIRO	13.75 S	172.25 W	SS	343	65	215	0.83	0.83	0.83
CSIRO	13.75 S	171.75 W	UN	344	68	218	0.83	0.83	0.83
CSIRO	14.25 S	171.75 W	US	335	66	213	0.83	0.83	0.83

World Bank 2009 - \* SN = Savaii North; SS = Savaii South; UN + Upolu North; US = Upolu South.

32. While there is still a high degree of uncertainty about changes in weather variability and extreme events for future climate projections, the EACC study drew two inferences from the scenarios: (i) the severity – and perhaps the frequency – of ENSO droughts is likely to increase, especially under the Global Wet scenario; and (ii) the severity (wind speeds) of major cyclones may increase and the return period of the most damaging cyclones may fall, leading to a significant increase in the average damage caused by cyclones which hit Samoa. The latter change may be most marked in the Global Dry scenario as a consequence of the significant increase in precipitation during the wet season.
33. The focus of climate change scenarios for Samoa is overwhelmingly on the nature and frequency of extreme events (e.g. tropical cyclones, drought) and how their impacts may be exacerbated by sea-level rise. Over a medium time frame, sea-level rise will incrementally impact upon Samoa through events such as flooding, coastal erosion and damage to coastal infrastructure. While low islands (e.g. atolls) are often judged to be more vulnerable to sea-level rise than high (e.g. volcanic) islands, the propensity for communities to be located along the coastal margins results in similar risks and vulnerabilities for all small island groups. In Samoa 70% of the population is reported to live within 1 km of the coast and critical infrastructure (e.g. hospitals, schools, port facilities, power plants, airports, tourist infrastructure) is also located in this zone.
34. Whilst the effects of sea-level rise are incremental over time, the impacts of tropical cyclones are an event of on-going and immediate concern. Tropical cyclones exacerbate coastal erosion, endanger life and well-being, and adversely impact upon infrastructure, agriculture, reefs, fishing and tourism. Climate modelling is indicating more El Nino-like conditions under global warming scenarios, and hence the potential for an increase in the intensity and frequency tropical cyclones in the Samoan region, increasing damage, and the costs and frequency of repairs.
35. Table 2 summarises estimates of the economic damage caused by the natural disasters that have affected Samoa over the past two decades. The estimates are based on: (a) reports of damage to buildings, infrastructure and other assets shortly after the event; and (b) the present value (using a real discount rate of 5%) of the shortfall in GDP relative to the trend rate of economic growth prior to the shortfall in economic growth.

**Table 2 - Economic Damage Caused by Recent Natural Disasters in Samoa**

Event	Return period Years	Asset damage		Loss of GDP		Total GDP US\$ million, 2005 prices	Loss as % of GDP	Notes
		US\$ million, 2005 prices	US\$ million, 2005 prices	US\$ million, 2005 prices	US\$ million, 2005 prices			
Cyclone Ofa	25	166	15	161	113%	Buildings & infrastructure		
Cyclone Val	100	388	36	163	260%	30% agricultural assets		
Cyclone Heta	10	1	4	236	2%	Limited damage		
Tsunami 2009	50	54	50	277	38%	Buildings, infrastructure & tourism		

36. The two cyclones – Ofa in 1990 and Val in 1991 – caused damage to agriculture, infrastructure and other assets valued at 2.5 to 3 times Samoa’s GDP in 1990. These cyclones rank 2nd and 3rd in the list of the most damaging cyclones in the South Pacific region as a whole in the last 50 years. A comparison of the severity of cyclone Ofa with a theoretical 100 year storm suggests a return period of about 25 years, with a storm surge of 1.6 m and onshore maximum wind velocity of 130 kph. The economic consequences of these and other cyclones suggest that the Samoan economy is resilient to storms with a return period of 10 years, but suffers significant damage from storms with a greater return period. This threshold is low by international standards. Following these 1990/91 cyclones, a Samoan Building Code was developed, in order to ensure that new buildings would be capable of withstanding such extreme events.
37. Samoa’s Second National Communication includes an updated vulnerability assessment for Samoa. The assessment was undertaken on a sectoral basis, covering water resources, health, agriculture, fisheries, biodiversity and infrastructure. These were the sectors where it was considered desirable and possible to build on the 13 sectors considered and prioritised in Samoa’s NAPA. The sectors considered in the NAPA were agriculture and food security; forestry; water, health, communities, biological diversity; fisheries, trade and industry; works transport and infrastructure; tourism, urban planning and development; coastal environments; and energy.
38. The NAPA identified that around three quarters of these sectors are highly vulnerable to the adverse impacts of climate change and climate variability, including extreme events. The nine sectors considered highly vulnerable from the highest to lowest were the water sector, agriculture and food security sector; forestry sector; health sector; urban settlements; coastal environments; communities; trade and industry sector; and the works, transport and infrastructure sector. Climate change and climate-induced disasters will cause instability in food production and water availability, affecting income generating activities for communities and the country at-large. The NAPA Implementation Strategy was last updated in 2008. Given the increased understanding since then, as evidenced in the Second National Communication, and the considerable effort now going into implementing adaptation interventions, the Strategy is being updated as a PPCR Phase 1 activity (led by the World Bank).

## ***Sector vulnerabilities and responses***

### **Water**

39. Samoa’s water resources and water supply systems are extremely vulnerable to current climatic patterns. In 1997–1998 and 2001, periodic droughts associated with El Niño events meant that Samoa’s water supply was rationed and water reservoirs were depleted. In 2006, low flows resulting from a 57% below average rainfall (associated with a weak-moderate El Niño) resulted in water shortages despite rains for August and September being 32% and 41% above average, respectively. Flooding, which is associated with cyclones and periods of heavy rainfall, has adversely affected water quality and quantity, due in part to erosion and sedimentation associated with flash flooding. The effect of flooding upon water quality and quantity in the urban areas is exacerbated by extensive forest clearance within the uplands of the watersheds to the south of Apia. Extreme heavy rainfall causes immediate flooding, which in turns causes extensive erosion, loss of terrestrial habitats, damage to agro-forestry and destruction to vital infrastructure, for instance hydrological monitoring equipment and reticulation systems.



40. The influx of flood-mobilised sediments into reservoirs and hydropower schemes damages the water supply as it compromises the generation of electricity. An increase in diesel power generation is recognised as a result of faltering or unsuitable supplies for hydropower. In recent years the increasing instances of flooding and extreme rain serve only to demonstrate the water sector's vulnerability to climate change and variability. In the early 1990s, Cyclones Ofa and Val caused major disruptions to Samoa's water supply by damaging water storage and reticulation networks as well as forests that act as natural water storage and flood control systems. As water infrastructure was effectively destroyed, during and immediately after the cyclones people harvested water by whatever means they could. The destruction of vital hydrological infrastructure also made it impossible to monitor water resources. Incidents of underground water becoming saline have been reported in parts of northern and eastern Savai'i.
41. Samoa's NAPA prioritises the water sector and recognises that immediate action must be taken to mitigate the adverse effects of climate change. The vulnerability and adaptation assessment conducted as part of the Second National Communication confirmed this view, and identified a number of priority adaptation measures, including:
- upgrading and climate-proofing water storage systems to secure supply of high-quality drinking water for the entire population throughout the year;
  - improved water quality monitoring to address contamination issues;
  - ensuring all future developments undergo proper Environmental Impact Assessments (EIA) to ensure they will not exacerbate pre-existing climate risks; and
  - enforcing sustainable management and water-related legislation to ensure ongoing availability of high-quality water.
42. The European Union is supporting a major water sector investment project in Samoa to extend treated and reliable water supply. Although the programme was not designed as a response to climate risks it could be seen as a "no regrets" approach that helps to address vulnerabilities in the water sector. PPCR-Samoa will also help reduce these vulnerabilities with potential improvements to water supplies to villages implemented under the CIM Plans.

## Health

43. The effect of climate change upon the health sector is evidenced in the growth of vector- and water-borne diseases. Other projected health issues are the result of changes in ecological and social systems, namely changes in local food production, potential malnutrition from successive agricultural under-production, population displacement and stresses caused by economic disruption. Some adverse health effects relate directly to weather and climatic events, for example potential fatalities in times of flooding or cyclonic activity. Others are more indirectly related to these events, for example water and vector-borne diseases in the wake of flood or cyclonic activity. Non-physical health problems – i.e. psychological or emotional stress – can frequently result from extreme weather events, particularly in instances where there is bereavement and damage to property and livelihood. Those most directly affected by extreme weather events are the poor, who tend to reside in flood-prone areas.
44. Samoa is susceptible to extreme climate events such as cyclones, flooding and droughts and water and food-borne diseases such as typhoid, diarrhoea and

gastroenteritis remain highly prevalent. Vector-borne diseases including dengue and filariasis continue to receive highest priority in terms of control and prevention programmes. The first major outbreak of typhoid in Samoa was recorded in 1994, following the two major cyclones Ofa and Val. Heavy rainfall and inadequate drainage mean that flooding is a frequent problem, compounded by land filling and the blocking of drains. Intense flooding causes foul water to be released to the surface, which poses a public health risk as septage and latrine runoff contaminate supplies.

45. Increased settlements along coastal areas also place additional pressure on already diminishing agricultural and fishery resources in the urban areas. Those who live in coastal areas amongst tropical vegetation, tidal mudflats and mangroves are at increased risk from vector-borne diseases and complications from wounds and tropical ulcers. The movement of rural villagers in urban areas is also creating sub-standard conditions in some areas, with poor sanitation and overcrowded housing contributing to the spread of communicable diseases.
46. The most important adaptation measures involve improving surveillance systems, early response systems and developing sustainable prevention and control programmes. Under the NAPA, MNRE, the National Health Service (NHS) and UNDP will undertake an integrated adaptation approach to develop an early warning system that can improve climate reporting to the health sector. Raising public awareness will also be particularly important.

## **Agriculture**

47. This sector's contribution to Samoa's GDP dropped from 12% in 1998 to 8% in 2003 and stayed at 7% during 2004–2007. Increasingly, agricultural production competes with other growing sectors such as tourism and manufacturing. Remittances and more attractive salary opportunities in Apia and overseas have likewise caused a shift away from agricultural production. In addition to these socioeconomic changes, the Ministry of Agriculture and Fisheries recognises that one of the factors contributing to the diminution of agricultural production in Samoa is climate change.
48. The numerous effects of climate change and variability - cyclones, flash floods, high rainfall, high temperature and long dry periods - have made agricultural production increasingly challenging. Climatic changes have meant greater incidence of pests and pestilence, which means a loss of quality and quantity in production.
49. Unstable and inconsistent food production caused by climate change has affected farmers' capacity for self-sufficiency, not to mention their ability to generate income from their crops. Perhaps the most devastating effect of natural disasters in Samoa is the damage wrought on agricultural production, and consequently the sector's capacity to supply domestic demand. Samoa's geographic location presents difficulties in terms of reducing the vulnerability of the agriculture sector, particularly as cyclones, droughts and floods become increasingly common.
50. Three intense cyclones have occurred in Samoa in the past twenty years, with major consequences on agricultural production. In particular, cyclones Ofa and Val caused significant damage to food and water sources. In island states like Samoa, forests and trees serve a vital role in managing watersheds, providing wood and non-timber resources and protecting biodiversity. Unfortunately, Samoa's forest cover has declined significantly in the past sixty years, as trees have been cleared for agriculture and, particularly in the 1970s and 1980s, for commercial logging. Cyclones have also contributed to forest degradation and fragmentation.

51. Irregular or inconsistent rainfall is especially problematic in Samoa because there is limited irrigation to provide steady supplies. Samoa has experienced drier-than-normal weather conditions over the past few years, most recently in 2004 and 2005, when average rainfall reached a thirty-year low.
52. Samoa's NAPA and Second National Communication have identified that adaptation in the agriculture sector will depend on national policies, planning for projected climatic changes and developing appropriate response measures. They have also noted the importance in the preparation of the agriculture sector plan impacts of climate variability and change are taken into account in a well-integrated manner. At the village level, emphasis is placed on implementing practical adaptation measures that enhance the resilience of families and village communities to climate change. Combined, these activities are seen as facilitating adaptation in commercial and subsistence agriculture and promoting food security. Many of the priority activities identified in the NAPA are being addressed through a UNDP-GEF supported Agriculture and Health Project. PPCR-Samoa will complement these efforts, with a focus on district and community levels.

### **Biodiversity**

53. Many changes are anticipated for the biodiversity sector as a result of climate change, not only in terms of species population but also in terms of the health of entire ecosystems. The health of the biodiversity sector has direct consequences for inter-related sectors, namely fisheries, forestry, agriculture, tourism, infrastructure, health and water. The biodiversity sector will need to implement sound adaptation activities to combat both the detrimental consequences of human activity and the effects of climate change. Sectoral efforts to assess vulnerabilities and generate future climate-change scenarios face numerous difficulties and uncertainties. Most animals depend on more than one habitat for survival. Thus if only one of these habitats is damaged or destroyed, a great deal of uncertainty surrounds their capacity to adapt and survive. Identifying potential damage to habitat and ecosystems will therefore provide an idea of how different species may be affected.
54. Increasing temperatures can affect species in quite profound ways. A change in sub-surface temperature may, for instance, affect the timing of biological events (phenology) for certain species. Many species may also show changes in morphology, physiology and behaviour associated with changes in climatic variables, for example accelerated attainment of sexual maturity.
55. Furthermore, there is some concern that particular species may become endangered or extinct, particularly species that are currently vulnerable, for instance the endemic Manumea and certain species of turtle. Changes in species distribution and density from climatic stress could also affect the availability of food and increase the frequency and intensity of pestilential outbreaks, which would again have some bearing on the capacity of a species to survive.
56. At the ecosystem level climate change is expected not only to affect the diversity of native fauna and flora, but also the ecosystems that provide goods and services for human welfare and development. Extreme climatic conditions relevant for the marine biodiversity sector include:
- sea-level rise;
  - higher sea surface temperatures;
  - increasingly frequent and intense tropical storms;
  - frequent flooding;

- extreme high and low tides; and
- increases in ocean acidification.

57. These climatic changes will have potentially disastrous consequences for marine biodiversity and ecosystems, including:

- habitat mortality: coral bleaching, erosion, and sedimentation;
- accelerated coastal erosion that will remove beaches and mangroves important to certain marine species;
- extensive coastal inundation and higher levels of sea flooding;
- waves and storm surges into coastal land areas, causing salinity in coastal wetlands and coastal springs;
- mangroves and wetlands pushed further inland by frequent king tides and sea-level rise;
- eutrophication, sedimentation and siltation of water resources, leading to invasive species proliferation;
- increased habitat and nursery areas destruction, ensuing in species decline;
- decline in inshore fisheries; and loss of natural reefs that protect the islands and coastal communities.

58. Priority adaptation measures that have been identified include:

- replanting mangroves and restoring habitats;
- re-introducing native and endemic plants within established national reserves and parks;
- improving the way protection regimes for marine and terrestrial biodiversity are managed; and
- reviewing the way different laws, policies, and strategies are implemented.

59. Although Samoa has developed a stronger understanding of the vulnerabilities and adaptation potentials of its biodiversity, critical information gaps still exist. More should be done to understand the role each species plays in the ecosystem. This would also improve general knowledge of the risks posed by degradation of the ecosystem and species loss.

## **Infrastructure**

60. Samoa's coastline is highly susceptible to erosion and flooding. More than three quarters of Samoa's population resides along the coastal plains. This indicates, to some degree, the strong reliance of some Samoans on marine resources for subsistence and commerce. Infrastructure and utility services are also located in these coastal zones and are thus extremely vulnerable to extreme climate events.

61. The Samoa Infrastructure Asset Management Project (SIAM) and the Cyclone Emergency Recovery Programme (CERP) have helped develop Coastal Infrastructure Management (CIM) plans, as well as promote design standards and codes of environmental practice for road works and coastal protection structures. Through the CIM Plans, the Government and communities have agreed on various solutions to manage coastal infrastructure in times of coastal erosion, flooding and landslides induced by cyclonic activity. These initiatives are now to be extended under PPCR to accommodate inland flooding and watershed management, particularly in light of their effect on coastal infrastructure and works.

62. With the projected likely increases of climate stresses in the coming decades, including cyclones, prolonged droughts, extreme flooding, storm surges and high sea levels, Samoa must urgently consider suitable technologies that will aid its adaptation efforts in safeguarding vital infrastructure. The vulnerability of the sector is high because of sea level rise, cyclones, flooding and wave actions. Drought is less of an issue except with respect to hydroelectric dams, which obviously depend on a steady input of rainwater to generate electricity. The droughts of 2002 and 2003 led to rationing of electricity. Frequency in climate-change-related drought will make Samoa increasingly dependent on diesel fuel for power generation, although generation costs from diesel are significantly higher.
63. Extreme flooding also has strong implications for the health of national infrastructure as it erodes roads, damages and fells telegraph poles and compromises utilities like water and electricity. Samoa was hit by flooding twice in 2006, once in February and again in November. To date this is quite rare for Samoa, confirming that return periods for extreme weather events are decreasing.
64. High-priority adaptation measures include revision and broadening of CIM plans so that they will further improve the resilience of coastal infrastructure against erosion and flooding. New economic development must also be managed sustainably to ensure that infrastructure is efficient, environmentally friendly and supports Samoa's economic growth on a continuing basis.

### ***Institutional context of Climate Change and Disaster Risk Management***

#### **Current Institutional Framework for Climate Change Adaptation**

76. Samoa is very efficient in coordinating and managing climate change response activities, including administering external assistance to support this. A number of development partners are active in Samoa, including Australia, the European Union, China, Japan, New Zealand, the World Bank, the Asian Development Bank and the United Nations Development Programme. Development assistance makes up around 15% of GDP. The multi-donor contributions are well coordinated by the Aid Coordination Division, located in the Ministry of Finance (MoF). This has resulted in a number of multi-donor, multi-year sector-wide programmes. This includes a three-year public sector investment programme that has been formulated and integrated into the budgetary process. Development partners work through the Aid Coordination Division. When development and related proposals are approved by Cabinet Development Committee, and require external financing, they are then processed through the Aid Coordination Committee, chaired by Prime Minister, before submission to development partners.
77. The National Climate Change Country Team (NCCCT), which was established in 1999, provides more direct coordination of climate-related activities. This covers initiatives funded by donors as well as through the national budget. Key members of the NCCCT are the Chief Executive Officers of relevant government ministries and representatives of civil society and the private sector (Figure 2). The NCCCT is an important coordinating as well as a policy-relevant technical mechanism for a whole-of-country response to climate change.
78. The MoF coordinates the flow of, and accountability for, financial resources while the Ministry of Foreign Affairs coordinates interactions with the United Nations Framework

Convention on Climate Change (UNFCCC) and other international and regional institutions. Samoa signed the Convention in 1992. In 2010 the MoF was designated as the National Implementing Entity for the Adaptation Fund as well as the Designated National Authority for the Clean Development Mechanism.

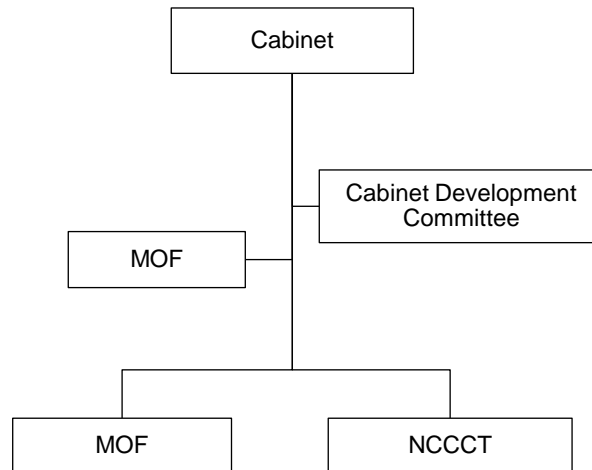


Figure 2. Institutional arrangements for climate change responses in Samoa.

78. MNRE is the ministry responsible for developing the key policy and planning documents that guide climate change programmes in Samoa. This includes the National Policy Statement on Climate Change (2007) and the NAPA. The Meteorology Division of the MNRE serves as the secretariat for the NCCCT (Figure 2). The MNRE is the agency responsible for the overall oversight of the implementation of Samoa's adaptation and mitigation activities. Implementation is carried out by relevant ministries. The MNRE also plays a major role in developing strategies, policies and coordinating adaptation measures. The Ministry of Finance provides macro-economic planning framework and support for climate change programmes via the Economic Policy and Planning Division as well as the Pilot Project for Climate Resilience Division. The MOF have also established an assurance process that is undertaken by the Aid Coordination Division. Other key Government agencies include the Ministry of Health, the Ministry of Agriculture and Fisheries, the Samoa Water Authority (SWA), Ministry of Works, Transport and Infrastructure (MWTI) and the Electric Power Corporation (EPC).

79. Arrangements for Disaster Risk Management (DRM) underwent a significant series of changes under Component C4.01 of the Samoa Infrastructure Assets Management Phase 2 (SIAM2) project. Key changes were: drafting of new legislation; comprehensive review of the National Disaster Management Plan; institutional strengthening of the DMO; support for enhanced response capacity for key organisations and stakeholders; simulation training sessions; enhanced communications capacity for the DMO and consideration of the potential for a disaster risk insurance facility for Samoa. Since completion of the SIAM2 works further improvements and capacity building has been undertaken. The ability and capacity of the DMO was severely tested during the 2009 tsunami and the overall conclusion was that the organisation and structures set up under the new frameworks coped well. A

post event review with support from the Ministry of Civil Defence and Emergency Management in New Zealand has been recommended to capture key learnings and identify potential further areas for improvement.

80. The formal development of the DRR management approach within governance structures at the national level has not been a widespread reality. Whilst legislative support for DRR exists in the country, there is a need to strengthen the implementation mechanisms for risk reduction initiatives at all levels through the development of a comprehensive DRR implementation strategy.
81. Competing priorities of the government create challenges to mobilise dedicated resources for DRM. There is presently no specific budget line for DRM activities of different ministries despite the fact that many agencies are currently implementing DRM related projects/activities.
82. The Disaster Advisory Committee (DAC) is the apex body that coordinates policy formulation and regulatory roles for all DRM functions, including CEOs from government ministries, private sector, NGOs and heads of international/regional organisations and overseas missions. The roles and responsibilities of the individual agencies need to be clarified and assured all member agencies are aware of their roles within the DAC and within their own organisations.
83. Currently the implementation of crucial Community Based Disaster Risk Management (CBDRM) activities is hampered by the insufficient numbers of NGOs with the capacity to design, develop, implement and evaluate DRM programmes. There is an urgent need to assist communities to develop and apply sustainable and realistic disaster mitigation to enable them to take appropriate actions to reduce the risk by themselves and for themselves.
84. Samoa has moved towards adopting a programmatic approach to CCA. This is evidenced by the SPCR which has set out the overall programmatic approach in Figure 3 below.

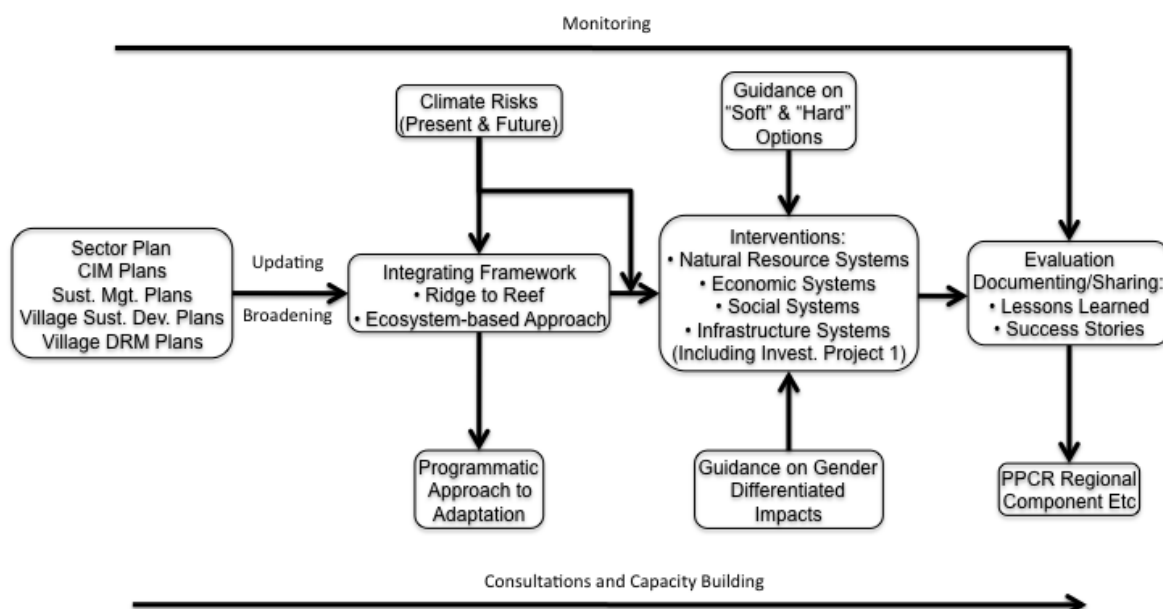


Figure 3 - PPCR Phase 2 – Programmatic Approach to Adaptation. (Source PPCR Feb 2011)

## CIM Strategy and CIM Plans

85. In the period 2000 to 2007 the WB funded the preparation of a Coastal Infrastructure Management Strategy and Coastal Infrastructure Plans covering all 41 political districts of Samoa. The project was undertaken in two phases IAMP1 from 2000-03 and SIAM2 from 2004-07. The CIM Strategy was originally prepared in 2000 and revised in 2006 to include specific reference to CC related issues. In particular the predicted hazard zones were reviewed against the NAPA data (2005) and inter-alia the Climate Risk Profiles (2007) and reference was made to expected land use impacts from more frequent and intense cyclone events. There is an opportunity under this programme to consider the more detailed and updated climate change projections now available for Samoa. The Strategy which has as its central focus a theme of “resilience”, directs coastal adaptation to focus upon activities which will have a positive effect upon community resilience. It set out a range of adaptation actions with a strong preference for “soft” actions such as managed retreat over “hard” engineered solutions such as seawalls. The CIM Strategy has been endorsed by Cabinet as official Government policy with respect to coastal management. The CIM Strategy and copies of all the CIM plans can be accessed on the MNRE website ([www.mnre.gov.ws](http://www.mnre.gov.ws))
86. CIM Plans integrate both climate-induced and geo-physical hazards and CIM Plan recommended actions are a package of improvements designed to allow communities to better respond to the challenges they are facing in their local environment in an integrated way. CC induced effects have been taken into full account in the formulation of CIM Plans, including the predicted inundation from cyclones, sea level rises, precipitation change and related flooding projections. The projected increase in severity and frequency of cyclones and associated hazards will mean that the need for villages to be able to respond is all the much greater.
87. The CIM Plans were formulated using a strongly participatory approach with extensive direct village consultation. All 271 recognised villages and 41 districts were covered by CIM Plans. The plans are in two volumes.
- Plan Development. A volume of background material including a description of the District’s environment, which describes the process undertaken in preparing the CIM Plan in conjunction with representatives of the Communities involved and the Government and other stakeholders with interests in the Plan area.
  - Implementation Guidelines. A volume that describes the Plans and Actions recommended as outcomes of the process, together with the partner responsible for implementing these outcomes. The Implementation Guidelines acknowledge the participants of the CIM Plan preparation process and each volume is jointly signed by Village representatives, the CEO of MNRE and the Minister of Natural Resources and Environment.
88. The CIM Plans were prepared using a standard methodology which was set out in the CIM Plan Handbook. Detailed surveys were carried out establishing coastal profiles at more than 300 locations all around Samoa. Included in this methodology was an Economic Evaluation of the projects and works proposed for inclusion in the CIM Plan. This evaluation undertook a Cost-Benefit evaluation which broadly compared the costs of the works with the value of the community assets protected or improved. Only those projects with a Cost/Benefit ratio of greater than 1.0 were included as recommended projects.



89. The CIM Plans prepared under IAMP1 are in need of updating to include the content and process modifications developed under SIAM2. In particular this covers the addition of an outline village disaster response plan and a revised consultation methodology to specifically seek inputs from women and youth. It was recommended that the CIM Plans be systematically reviewed from five years after their completion.
90. A consolidated database of the recommended actions contained in the CIM Plans has been prepared by the Planning and Urban Management division of MNRE. This identifies the district, village, action recommended and the party proposed to be responsible for the action. These actions have been subdivided into district and village actions.
91. District actions are major works, usually carried out by a Government Ministry or National Authority such as MWTI or LTA, at a district or national level. Examples would be a major new road, re-alignment or reconstruction of an existing road, a new bridge, a new seawall, river training or flood protection works, telecommunications, water or electricity supply reticulation. Approximately 400 “large” works are identified in the CIM Plans.
92. Village actions are small scale local village level works, usually initiated in response to requests from the villages and implemented by MWCSD or other Government organizations. Examples would be work road upgrades, localized drainage channel improvements, a new culvert replacing an existing stream crossing, repairs or maintenance to an existing sea wall, local water supply improvements and the like. Approximately 1720 “village” works are identified in the CIM Plans. Further details of typical works are provided in Annex 6.
93. CIM Plans also contain a framework for DRM response at the local community level. The village based response plans set out recommended actions and seek to have villages identify responsible person(s) for the four stages of a potential emergency event, primarily cyclones. Actions to be taken are identified for the Samoa cyclone warning system four stages of standby, warning, during and post event recovery phases. Preparation of these plans together with a consultation discussion on DRM planning at the village level commenced as part of CIM plans under SIAM 2 during which 26 of 41 districts were completed. There is need to revisit IAMP1 plans and complete and do second rounds to embed Village Based Response plans in all villages.

Detailed descriptions on CIM Plan recommended measures are contained in Annex 6. This also includes an example of a CIM Plan showing the hazard zones and village DRM response plan together with an example of the signature page of a CIM Plan showing village representatives signatures together with the signatures of the CEO of MNRE and the Minister of MNRE for the Government.

### **Civil Society Involvement**

94. Ties to local communities place civil society organizations in Samoa in a good position to understand their needs as well as to promote climate change adaptation strategies. Civil society organizations, such as SUNGO, Women in Business, O Le Siosiomaga Society Incorporated (OLLSI) and the Farmers’ Association, have made significant contributions in terms of working with local communities to build their capacity and awareness about climate change issues, in particular with regard to climate change impacts on livelihoods, disaster risk management and post-disaster recovery. However, these initiatives have been small scale and dispersed. More needs to be done in terms of building capacity and awareness of communities about systemic

changes in climate (including extreme weather and climate events) and their potential impacts on livelihoods. Communities also need to be encouraged and assisted to take ownership of problems, as well as the practical solutions. At the same time, as climate change is not their primary area of expertise, civil society organizations working with local communities also need further capacity building as climate change is not their primary area of expertise

95. The support to civil society- and community-led initiatives addressing climate change has been provided through a number of mechanisms. Using the Samoa UNDP-GEF Small Grants Programme as well as its Community Centred Sustainable Development programme and other mechanisms, UNDP supports the implementation of community-based adaptation projects (financed through multiple sources including the GEF-managed Least Developed Country Fund, the Strategic Priority on Adaptation and Special Climate Change Fund) that use existing village-level delivery mechanisms and strengthen national-local level institutional linkages. Under the World Bank-financed Samoa Infrastructure Asset Management Project Phase 2 (2004-2008), MNRE ran a Risk Adaptation Measures Small Grant Scheme (RAMGS), providing financing for low cost and small scale community initiatives designed to help local coastal communities withstand the impacts of natural hazards. More recently, the Government established the Civil Society Support Programme (CSSP) in order to harmonise the support to civil society. The CSSP pools donor funds and makes it easier for civil society groups to access resources under a common application process and reporting requirements. The CSSP will provide both funding and capacity building support to NGOs and CBOs, for a range of development activities that would benefit communities and vulnerable groups. SUNGO, as a focal point for civil society, will be the key provider of capacity building support to NGOs and CBOs.

#### **Long term solutions and barriers to achieving**

96. The desired end state after the completion of this programme and the complementary work being undertaken under the WB's PPCR, is for the majority of coastal communities in Samoa to be aware of the likely consequences of changes to their environment as a result of climate change; for there to be a range of adaptation measures in place to enhance the resilience in those communities and; for there to be capacity within Government and the community to manage unfolding climate change risks and opportunities in the future.
97. To achieve this, among other things, practical on-ground adaptation actions identified in CIM Plans and agreed with coastal communities needs to be implemented. These will include supporting the relocation of village houses and assets out of hazard zones (fully in line with community level expectations and understanding of emerging risks), increased shoreline protection from coastal structures to heightened and new climate induced risks, improved coastal and riparian planting to alleviate climate change induced erosion and flooding threats and other climate resiliency related infrastructure improvements to roads, drainage and water supply. This needs to be coupled with a set of institutional strengthening processes to ensure the effective implementation of the CIM Plan actions that take climate change risks into account, including streamlined institutional coordination mechanisms and regulatory processes for physical works processes.
98. Current **barriers to achieving the desired long term solutions** include the following.

**99. Awareness, knowledge and information gaps**

Awareness, knowledge and information gaps on climate change risks prevail at both community and government levels. There is often a lack of understanding of the difference between weather and climate change –induced risks, and other environmental and human-induced coastal impacts which often leads to confused or mal-adaptive responses. There is a lack of systematic capturing, analysis and dissemination of coastal adaptation experiences. There is often poor understanding of the potential for a “non-structural” responses, such as managed retreat or relocation, to risks and hazards.

100. The lack of systematic capturing and dissemination of cross-sectoral adaptation experience in order to support integrated adaptation measures at the national level and in communities is also a barrier to achieving the desired long term goal.

101. Partial relocation of affected village assets and infrastructure from hazard zones has been identified as a preferable option throughout the CIM Plan community consultations and formulation process. However, no mechanism currently exists for this to occur in a coordinated manner. As most of the land in the villages is customary land owned by the immediate or extended families, moving out of hazard zones represent a viable option in Samoa, adjusted to village social, land tenure-ship and institutional structures, but currently there is limited understanding of the communities on how these processes can be suitably planned for and managed.

**102. Capacity gaps in technical areas.**

Knowledge about the range of adaptation techniques available is not widespread in the community or within Government ministries and authorities charged with providing a response. Techniques for analysis, structured evaluation of options and selection of preferred responses are lacking. Gaps exist on how to undertake site-specific adaptation assessments, planning and technical measures, planning in complex systems, quality assurance and change management.

103. Limited technical resources and human capacities to provide tailored information on climate change trends and associated risks, as well as monitoring of climate impacts on the natural resource base, in order to support informed decisions by policy makers, planners and the communities in key development sectors are also barriers to successful adaptation.

104. There is a lack of technical experience in the application of structural adaptations other than seawalls and other non-structural responses. As a result there is a limited appreciation of their potential and effectiveness both in the relevant Ministries and amongst the community in general.

105. The limited procurement experience and capacity in MNRE is also a barrier to the effective implementation of CIM Plan adaptation measures. This has resulted in limited works execution to date although the CIM Plans have been completed for a number of years. The limited capacity has also been exacerbated by inadequate procedures to supervise the works undertaken to date and limited technical capacity to review solutions proposed by private sector consultants hired to undertake design and supervision of works.

**106. Institutional and Policy Gaps:**

Compared to a number of other Pacific nations Samoa has a well-developed and executed holistic economy-wide approach to CCA. However this is not to say the structure and programmes are complete. Whilst the primary focus on co-ordination to

date has been to get the Government structures right, more still needs to be done in this area to ensure full coverage. Involvement of civil society in CCA has also been sporadic and uneven. Filling those gaps will be among the focus of this AF financed programme

107. Currently the regulatory processing guiding physical works processes administered through the Planning and Urban Management Division in MNRE (like the Preliminary Environmental Assessment Review or Environmental Impact Assessment) does not integrate climate change risk considerations. In Samoa a key community-based mechanism adjusted to the traditional leadership and customary land tenure structures is the identification for village by-laws to regulate village activities. Currently the development of village bylaws to support adaptive coastal management is only being developed on a pilot basis through the UNDP-GEF funded Pacific adaptation to climate change project, but their effective and widespread application is lacking. The current Samoan building code in effect is based on an earlier version of the New Zealand code. While the NZ code has recently been substantially revised and updated, the Samoan code remain outdated and without incorporating latest climate risk assessments. This policy gap is especially worrisome, given the increase in higher, 2 storey building developed, needing for higher levels of wind loading arising from increased frequency and intensity of cyclone events not to mention non climate related issues based on seismicity assessments.

#### **PROGRAMME OBJECTIVES:**

108. The proposed programme by the Government of Samoa will strengthen the ability of Samoan communities and the public service to make informed decisions and manage likely climate change driven pressures in a pro-active, integrated and strategic manner.

109. The proposed programme will contribute to all outcomes listed within the 2 objectives of the Adaptation Fund Strategic Results Framework (AFB/EFC.2/3 from 31 August 2010).

**Objective 1:** Reduce vulnerability to the adverse impacts of climate change, including variability at local and national levels

**Outcome 1.1:** Reduced exposure at national level to climate related hazards and threats

**Output 1.1:** Risk and vulnerability assessments conducted and updated at national level

**Outcome 1.2:** Strengthened institutional capacity to reduce risks associated with climate-induced economic losses

**Output 1.2** Strengthened capacity of national and regional centers and networks to rapidly respond to extreme weather events

**Outcome 1.3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level

**Output 1.3.** Targeted population groups participating in adaptation and risk reduction awareness activities

**Objective 2:** Increase adaptive capacity to respond to the impacts of climate change, including variability at local and national level.

**Outcome 2.2:** Increased adaptive capacity within relevant development and natural resource sectors

**Output 2.2 and 2.3** Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability

## Programme Strategy

110. The programme will provide the vehicle to implement the approved Coastal Infrastructure Management (CIM) Plans on the ground as a practical community based response to adaptation. The programme will enable the necessary technical and financial resources for this to be used in a programmatic manner which when combined with the parallel complementary works undertaken through the CRIP/PPCR will result in a “whole of country” adaptation response for coastal management at the nationwide scale. The implementation of appropriate responses will be supported by the programme through site specific design of adaptation interventions and active community engagement in the process.

111. The programme has a 3 pronged approach:

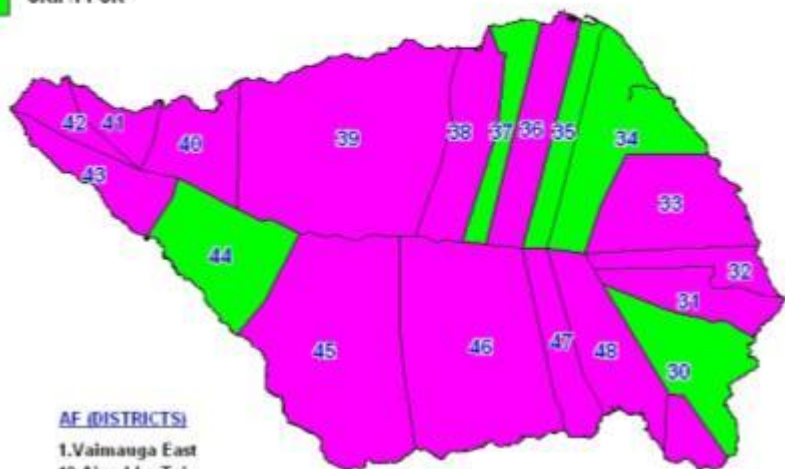
- A main focus upon on-the-ground implementation of coastal adaptation measures, addressing climate change impacts on key infrastructure elements and coastal ecosystems in an integrated way. Integration is achieved within the framework of a comprehensive village land use plan – the CIM Plan.
- Strengthened institutional policies and capacities to provide an enabling environment for climate resilient coastal development; and,
- The systematic capture and dissemination of knowledge and lessons learned to aid and inform further implementation and pursuit of climate resilient development.

112. Alignment of this AF financed initiative with the CRIP/PPCR has been a critical element of the programme design. This is achieved through high level co-ordination between the two programmes through the sharing of a Steering Committee, pursuit of coordinated and complimentary actions across the districts supported by each programme and common processes adopted to execute works items. The 41 districts of the country have been divided between the two programmes. CRIP/PPCR is financed through the WB with 25 million USD focusing upon 8 districts along a major road climate proofing and upgrade project plus a further 8 districts which focus upon the early version CIM Plans completed under Infrastructure Asset Management Programme 1 (IAMP1). There is also a balance of districts between the two major islands. The AF programme will target the remaining 25 districts in Samoa– the remaining 6 districts where CIM Plans were completed under the IAMP1 project between 2000 – 2003 plus a further 19 which were completed more recently under the Samoa Infrastructure Asset Management Phase 2 (SIAM2). Upon completion of the two programmes, the entire country will have made substantial progress toward adaptation to CC induced changes in the environment.

Figure 4 below shows how all the districts in Samoa will be covered upon completion of the AF programme and CRIP/PPCR project.

KEY

- AF DISTRICT
- CRIP/PPCR



AF (DISTRICTS)

- 1.Vaimanga East
- 10.Aiga I Le Tai
- 20.Va'a O Fonoti
- 22.Anoama'a West
- 28.Gagaemauga II
- 40.Palauli East
- 14.Siunu
- 16.Lotofaga
- 17.Lepa
- 18.Aleipata Itupa I Luga
- 19.Aleipata Itupa I Lalo
- 21.Anoama'a East
- 24.Faasaleleaga II
- 25.Faasaleleaga III
- 26.Faasaleleaga IV
- 29.Gagaemauga III
- 30.Gagaifomanga I
- 31.Gagaifomanga II
- 32.Gagaifomanga III
- 34.Vaisigano II
- 35.Falealupo
- 36.Alataua West
- 38.Palauli West
- 39.Satupaitea
- 41.Palauli Le Falefa

CRIP/PPCR (DISTRICTS)

- 1.Vaimanga West
- 15.Falealili
- 3.Faleata West
- 6.Sagaga Le Usoga
- 5.Sagaga Le Falefa
- 9.Aana Alofi I
- 10.Aana Alofi II
- 11.Aana Alofi III
- 12.Falelatai/Samatau
- 13.Lefaga & Faleseela
- 24.Salamumu Safata
- 37.Gagaifomanga I
- 35.Gagaemauga II
- 30.Faasaleleaga II
- 44.Salega
- 34.Gagaemauga I

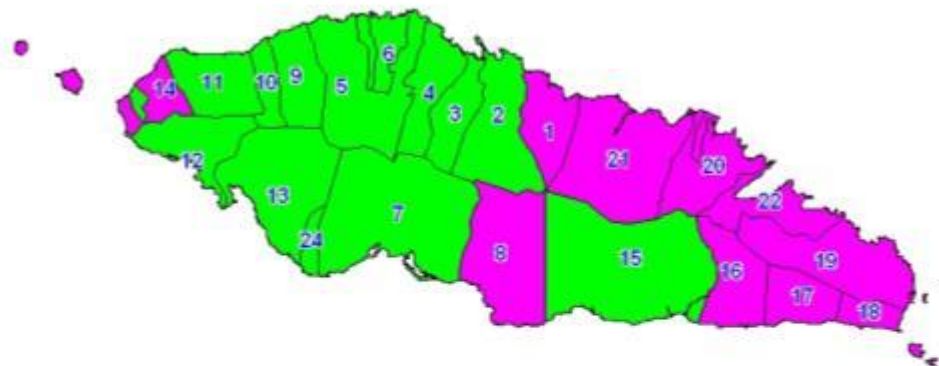


Figure 4: Political Districts of Samoa – Division of districts between AF Programme and CRIP/PPCR Project. (Source MNRE Technical Division.)

**PROGRAMME COMPONENTS AND FINANCING:**

<b>PROGRAMME COMPONENTS</b>	<b>EXPECTED OUTPUTS</b>	<b>EXPECTED OUTCOMES</b>	<b>AMOUNT (US\$)<sup>1</sup></b>
<b>1. Community-engagement in coastal vulnerability assessment, adaptation planning and awareness</b>	<ul style="list-style-type: none"> <li>• CIM Plans reviewed in 25 districts and updated to integrate climate change-induced disaster risk management principles, adopting a Watershed and Ridge to Reef Management approach.</li> <li>• Village hazard zone relocation plans taking climate risks into account formulated in at least 15 villages in selected districts</li> <li>• Training delivered to at least 300 village leaders and CSO representatives in 139 villages on review of CIM Plans and relocation planning process integrating climate risks.</li> </ul>	Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages	825,640
<b>2. Integrated Community – Based Coastal Adaptation and Disaster Risk Management measures</b>	<ul style="list-style-type: none"> <li>• Climate proofing measures implemented on coastal roads and related infrastructure in at least 10 districts and 40 villages (see Annex 6 details).</li> <li>• Shoreline protection measures implemented in at least 10 districts and 40 villages.</li> <li>• Water supply enhanced to withstand climate change risks in least 5 districts and 15 villages.</li> <li>• Flood protection measures are implemented in at least 5 districts and 15 villages.</li> </ul>	Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages	6,024,360
<b>3. Institutional strengthening to support climate resilient coastal management policy frameworks</b>	<ul style="list-style-type: none"> <li>• Revised national organisation and institutional structures for CIM Plans implementation.</li> <li>• Village hazard zone relocation handbook prepared to guide further relocation planning activities.</li> <li>• Regulatory procedures for physical works implementation revised with climate change risks integrated.</li> <li>• Policymakers and technical officers in the relevant Ministries and Authorities are trained on climate risk assessment and planning processes for coastal adaptation.</li> <li>• Adaptation lessons learned and best practices generated through the adaptation implementation and related policy processes are captured and disseminated nationally and globally</li> </ul>	Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy frameworks, processes and responses	500,000

<sup>1</sup> Output-specific budget breakdown is included in Annex 2 of the proposal

	through appropriate mechanisms.	
6. Programme Execution cost		698,250
7. Total Programme Cost		8,048,250
8. Programme Cycle Management Fee charged by the Implementing Entity <sup>2</sup>		684,101
<b>Amount of Financing Requested</b>		<b>8,732,351</b>

**PROGRAMME CALENDAR:**

<b>MILESTONES</b>	<b>EXPECTED DATES</b>
Start of Project/Programme Implementation	October 2011
Mid-term Review (if planned)	October 2013
Project/Programme Closing	October 2015
Terminal Evaluation	October 2015

<sup>2</sup> On the request of the Government of Samoa, the project will be implemented by UNDP using the MIE modality. UNDP is able to provide the following implementation services through its country office, regional and headquarters networks: project identification, formulation, and appraisal; determination of execution modality and local capacity assessment of the national executing entity; briefing and de-briefing of project staff; oversight and monitoring of AF funds, including participation in project reviews; receipt, allocation and reporting to the AF Board of financial resources; thematic and technical capacity building and backstopping; support with knowledge transfer; policy advisory services; technical and quality assurance; and troubleshooting assistance to the national project staff. The breakdown of specialized technical support services provided through the MIE fee is provided in Annex A.



## **PART II: PROGRAMME JUSTIFICATION**

- A. Describe the 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.**

113. This programme is designed to complete a holistic and country-wide approach to climate change adaptation in the coastal zones in Samoa. The programme has a 3-pronged structure, focusing on the implementation of on-the ground adaptation measures at the community level, integrated with sustainable island development processes and supported through enhanced national institutional and knowledge management capacities.

The following outputs and activities directly address the barriers and intended programme outcomes listed above

### **Component 1: Community-engagement in coastal vulnerability assessment, adaptation planning and awareness**

114. The process of coastal adaptation in Samoa is strongly community-based. The CIM Plans are community based plans focusing upon response planning for individual villages taking into account their particular geographical circumstances and the community's perceptions of their needs. As the "partnership" principle of the CIM Plans underpins the success of implementation of adaptation works (Component 2) and needs to be supported by increased institutional capacity and knowledge (Component 3), the proposed programme components have strong inter-dependencies.

Outcome 1: Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages

Output 1.1: CIM Plans reviewed in 25 districts with climate-induced disaster risk management fully integrated, adopting a Watershed and Ridge to Reef Management

115. Of the 25 districts covered in the programme six (Vaimaunga East, Aiga I Le Tai, Va'a O Fonoti, Anoama'a West, Gagaemaunga II and Palauli East) are first generation CIM Plans completed in 2003-03 under IAMP1. As such they do not have the DRM component of the SIAM2 second generation CIM Plans. This component was an extended discussion during the village consultation to explain the concept of village level DRM preparedness and response planning and the addition to the final village plan of a template for the village to identify key personnel to undertake specified roles in the warning stage, during the event and in the recovery phase. Therefore, the proposed programme will facilitate the revision IAMP 1 CIM plans in order to integrate preparedness and response measures to disaster risks induced by climate change, considering the most recent available information on climate change projections. The proposed programme will achieve this through consultation sessions in the 30 villages in these six districts in order to review and complete updates of their CIM Plans.

116. For the balance of the 19 districts for which "second generation" CIM Plans were prepared under SIAM2, a district level consultation meeting will be held to seek inputs from the representatives of those villages in those districts of any changed circumstances since the formulation of the CIM Plan. In addition, the opportunity will

be taken to incorporate the “Ridge to Reef” concept into the CIM Plans to promote sustainable land management practices including the village hinterlands. This concept is regarded as significant to support residents in the coastal villages to better understand the significance of changes induced in the upper parts of catchments to their well-being in their coastal location – e.g. reductions in runoff as a result of more sustainable land use and forest management techniques. Key to achieving this will be promotion of an understanding of the “whole of catchment” approach which is being developed in the Water Catchment Management Plans.

117. Where flooding has been identified as a particular issue in the CIM Plans, options for flood relief works and protection works will be specified through the review process proposed under this output. These will include river channel improvement works, re-alignments, stream clearances. These interventions will be undertaken as part of the CIM Plan works programme under Component 2.

118. A revised title and terminology will be developed for CIM Plans to reflect their wider purpose. It has been recognized that they can be utilized as a framework to direct and guide village development within the context of the multiple hazards arising from CC induced changes in the environment rather than just managing coastal infrastructure which was their originally conceived purpose and function. Of particular note the Samoan terminology will be carefully selected to ensure that it conveys the appropriate message to the community.

119. The introduction of 3D participatory modeling techniques will be supported, to provide a visual engagement process and tool for stakeholders for adaptation planning in particular districts. This can be based on the partnership UNDP is developing with The Nature Conservancy who has successfully applied this in various Pacific Countries, and currently supporting the Samoa Forestry NAPA project through this.

Output 1.2: Village hazard zone relocation plans formulated in at least 15 villages in selected districts

120. In many villages a proportion of existing housing stock is located within coastal hazard zones identified as part of the CIM Plan formulation – either coastal erosion, flood or landslip hazards that are exacerbated by climate change effects. The number of houses affected varies greatly from village to village depending upon the size of the hazard zones which are significantly topography affected. Villages in flatter terrain often have greater numbers of houses in hazard zones but often a change in elevation of only a metre or two is sufficient to provide increased protection and long-term resilience. Under this output, detailed hazard zone relocation plans will be formulated through continued community engagement, in 15 target villages where relocation of village assets and infrastructure located in hazard zones has been identified by the communities as preferable option during the CIM Plan consultations. This will help to create a modality for such processes and raise awareness for communities on suitable approaches and methods, considering the particular village systems based on customary land owned by the immediate or extended families.

121. In addition to the planned relocation of houses from within hazard zones, detailed plans will be drawn up for the relocation and establishment of all basic and supporting infrastructure, such as access roads, water supply and other utilities. This will be conducted in an integrated manner to spread costs over as many households as possible and to synchronize with the individual household relocation actions.

122. The formulation of the village relocation plans will commence with a detailed planning exercise based upon the relevant village CIM Plan. From this, the affected

households can be identified as well as potential locations for the houses to relocate. This will only be able to be broadly determined and will need to be then discussed in detail with the village council and the concerned landowners. A framework for this consultation process already exists with the CIM Plan Handbook which outlines procedures and protocols to be followed for a village consultation process.

123. Following initial village consultations, a draft relocation plan overlaid on the aerial photograph base of the CIM Plan will be prepared for a further village consultation. The suggested location of individual houses and new infrastructure will be shown on the plan together with a suggested sequencing of works. Exact costs for Government activities to support hazard zone relocation will be determined using unit rates updated from the costing information already contained in the CIM Plan reports.

124. Once agreed with the village, a formal agreement will be prepared committing both the village and Government to a programme of relocation actions. In formulating the relocation plans consideration will be given to a range of financial incentives which may be required to facilitate household removals.



Figure 5. Example of a CIM Plan indicating hazard zones from Si’umu district on the South Coast of Upolu, a target area proposed for the AF programme

Output 1.3: Training delivered to at least 300 village leaders in 139 villages on review of CIM Plans and relocation planning process integrating climate risks.

125. Training will target the key village representatives, including traditional leaders,

government representatives, women's committees and untitled men's group (mostly youth). Villages in Samoa are led by a village council or *fono* comprised of titled *matai* from the extended family groups which make up the village. Government's relationship with the village is maintained through the *Sui o le Nu'u* or village mayors who are village members retained on a stipend from Government. The *Sui o le Nu'u* are a significant conduit for the dissemination of information to villages and their activities are co-ordinated by the Ministry of Women, Community and Social Development (MWCSD). Separate monthly *Sui o le Nu'u* meetings are held for the two main islands of Upolu and Savai'i.

126. In addition to the *fono*, each village has a women's committee who are significant in village affairs particularly in health, education and environmental matters, and will be involved in all stages of training, consultations, planning and implementation processes. Further village resources to implement village based works and projects are available from the untitled men's group who are effectively the next generation of *matai* in training.

127. All three groups will be critical to the success of the programme and training will need to be delivered to all at various times in relation to different actions and activities to be completed. This training will support skills in vulnerability assessment, adaptation planning, relocation processes, coastal adaptation techniques, participatory processes, and others related to the review and planning processes in outputs 1.1 and 1.2. These skills will be critical as the village resources will be required to support the delivery of activities and works under Component 2. The CIM Plan Handbook developed under the SIAM2 project provides a series of protocols for village based consultation sessions which can be utilized for this programme. Training sessions will utilize briefing notes in Samoan on the CIM Plan works programmes and simplified guides for village relocation planning.

## **Component 2: Integrated Community-Based Coastal Adaptation and Disaster Risk Management measures**

128. This Component of the programme contains the bulk of the physical actions, outcomes and outputs. Essentially it is the practical adaptation activities identified in the CIM Plans which are all designed to increase community resilience. In each village a set of concerted adaptation actions will be carried out in a programmatic fashion, in order to have a significant impact on reducing community vulnerability. The actions will be implemented upon the plan base established and reconfirmed under Component 1 and require the capacity enhancements which Component 3 will deliver. Overall infrastructure related improvements represented around 35% of the combined District and village level actions identified in the CIM Plans.

Outcome 2: Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages

129. This section provides an overall summary of the focus and type of adaptation interventions, while specific technical details can be found in Annex 6 of the proposal.

- Output 2.1: Climate proofing measures implemented on coastal roads and related infrastructure in at least 10 districts and 40 villages

130. Access to and from and within village environs is critical infrastructure for village wellbeing. In many cases it has either been adversely affected by past cyclone events

or is significantly at risk from future events projected to increase in frequency and intensity. Improved road access and security of access will encourage village relocation activities, in particular, the sealing of access roads to inland plantation areas will encourage relocation away from more vulnerable coastal locations. Climate proofing of associated infrastructure such as drainage improvements and stream or watercourse crossings will also enhance resilience of settlements and facilitate relocation in identified cases.

131. The CIM Plans have identified a number of climate proofing actions required on village and district access roads. These have included hard coastal protections such as revetments and groynes, maintenance and reconstruction of some seawalls to protect roads and in some instances relocation of short sections of road further inland. Of the 25 districts included in the programme 16 had road related projects identified as priority works at a district level (i.e. works serving more than 1 village or of regional or national significance) and 23 of 25 districts had village road projects identified (i.e. projects serving just the named village).

132. The specific projects and interventions identified in the CIM Plan will be subject to further site-specific assessment and design. Works will be executed through the CIM Plan Works Unit in the Land Management Division of MNRE or by agreement under the annual works programme of the LTA with funding support for the AF programme.

Output 2.2: Shoreline protection measures implemented in at least 10 districts and 40 villages

133. Activities under this output will involve a combination of coastal protective structures, beach replenishment and riparian and coastal planting. When taken together, these three actions represent almost 20% of the recommended actions developed under the CIM Plans. Many villages have some form of coastal structures already but generally these are in poor condition and poor quality, and would unlikely survive major storm events. With modifications, some of which are suitable for village based works teams to implement with appropriate technical support, many of these structures can be improved to offer enhanced levels of protection. A guideline document will be prepared to provide guidance for village communities to build and maintain sustainable shoreline protection measures.

134. Several candidate sites were identified for beach replenishment in the CIM Planning process. Two will be selected for the preparation of fully designed and costed schemes which will be subject to an economic cost-benefit analysis applying the methodology developed in the CIM Plan Handbook. Based on the site-specific assessments and plans, works will be implemented via the CIM Plan works programme, supported by the proposed AF project. This will be especially crucial for beach areas with tourism use, as a key economic and livelihood sector of Samoa, where seawalls are not suitable given the need to maintain aesthetic value and visitor access of the shore.

135. Vegetation planting along the coastline and riparian areas of streams and water courses was the most frequently proposed adaptation response in the CIM Plans. This activity will be supported through site specific assessments and planting guidelines listing suitable native species, planting regimes and initial maintenance. The Ministry of Agriculture and Fisheries and the Forestry Division of MNRE will be involved in this activity and plant material will be sought from their resources for community based implementation. A small grants based funding mechanism will be applied to support this activity. Previous experience with community based projects supporting vegetation planting, as part of the IAMP and SGP-CBA small grants

schemes showed good results. The strength of village based social administration in Samoa is fundamental to the success of these schemes. Experience from these initiatives will be drawn to implement coastal protection measures under the proposed programme.

#### Output 2.3: Water supply enhanced in at least 5 districts and 15 villages

136. Water supply to villages is either from Samoa Water Authority mains supply, independent communal village supply schemes or in a limited number of cases individual household supplies from roof tanks, wells or stream sources. Requests for enhanced water supply were around 15% of all the infrastructure works items in the consolidated village work database developed from the CIM Plans.

137. Activities under this output will address main sources and components of water supply, including enhancement of surface water management, rainwater catchment/harvesting and storage, groundwater management (including quantity, quality control, management of wells), as well existing reticulated systems.

138. Water supply adaptation actions will be supported by demand management through a community awareness programme on water saving practices, and application of water-related regulations and incentives.

#### Output 2.4: Flood protection measures are implemented in at least 5 districts and 15 villages

139. Given the low-lying topography of many villages located in the coastal zone, flooding is often an issue. Activities under this output will include the realignment of streams and watercourses with improved outlets to the sea. Riparian planting activities will also assist in reducing erosion and flooding. In addition individual key village infrastructure protection (schools, clinics etc) by various means such as floor level raising and flood protection stop banks will be implemented based on site-specific assessments and feasibility studies. Works will be implemented through the CIM Plan works programme

### **Component 3: Institutional strengthening to support climate resilient coastal management policy frameworks**

140. Component 3 has been designed to secure the institutional and capacity improvements to enable full realization of the benefits of Components 1 and 2. It provides for targeted support in key areas in the main Ministries responsible for CCA action. The focus has been upon capturing key lessons learned and building capacity improvements in a manner which will ensure they can be sustained as a core activity of the Government in future.

Outcome 3: Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy frameworks, processes and responses.

- Output 3.1: Revised national organisation and institutional structures for CIM Plans implementation.

141. At present the responsibility for the implementation of CIM Plans is only broadly defined in the Plans by naming the ministry or authority involved. Under this output a detailed analysis will be undertaken to more closely identify roles and actions required

to further strengthen the inter-ministerial and authority co-ordination for the implementation and long-term maintenance of CIM Plan works. The revised coordination and collaboration mechanisms will be formalized through memoranda of understanding and Cabinet-level agreements, to ensure enduring institutional arrangements.

Output 3.2: Village hazard zone relocation handbook prepared to guide further relocation planning activities.

142. The CIM Plan Handbook will be the starting point for this activity. It sets out the recommended procedures and protocols to be followed to formulate and update a CIM Plan. A similar guide will be developed for the village relocation planning process as it involves a similar requirement for intensive and on-going village consultation and community engagement. The handbook will provide suggested flow charts of activities, checklists for data collection and recording, frameworks for village agreements similar to the CIM Plans and implementation plan frameworks. The Handbook will provide guidance for the village hazard zone relocation planning process under Output 1.2 and their implementation in component 2. Experience from the planning and implementation processes will be systematically captured through the knowledge management activities, in order to incorporate progressively and finalize the handbook as a key tool for the replication of future relocation activities

- Output 3.3: Regulatory procedures for physical works implementation revised with climate change and disaster risks integrated.

143. All development activities are currently controlled under the Planning and Urban Management Act 2004 and subsidiary regulations. Administered through the PUMA Division in MNRE, this requires, inter alia, a development consent for all developments which may trigger the need for a supporting Preliminary Environmental Assessment Review (PEAR) or a fuller Environmental Impact Assessment (EIA). The regulations governing these and the internal procedures and protocols adopted by the PUMA Division will be reviewed and amended where necessary to ensure both CC and DRM are integrated as core principles. Standard conditions suitable for attachment to Development Consents reflecting CC and DRM issues will be developed along with the relevant explanatory guides for public information to add to those already used by PUMA.

144. Under the PACC Project activities in Samoa which is being undertaken in 5 villages, the concept of “village bylaws” is being developed to test out its effectiveness in the Samoan context. This concept will be reviewed and if found effective will be replicated in the villages under this programme thus strengthening their application process.

145. The Samoan Building Code is administered by MWTI and is based upon an earlier adaptation of the New Zealand code undertaken for a number of Pacific counties including Samoa. The NZ code has recently been substantially revised and updated. Under this activity the Samoa Building Code will be reviewed to both reflect these changes and more recent experience in Samoa with an increased number of buildings above 2 storeys developed, and the need for higher levels of wind loading arising from increased frequency and intensity of cyclone events plus seismicity assessments.

146. Procurement processes will be reviewed and MNRE capacity strengthened to ensure adequate assurance and supervision processes over private contractors and quality implementation of coastal adaptation works measures. Technical manuals will be



developed to guide this activity and training and capacity development will be undertaken.

- Output 3.4: Policymakers and technical officers in relevant ministries and authorities are trained on climate risk assessment and planning processes for coastal adaptation.

147. These activities will involve the development and delivery of training and capacity building in MNRE, MWCSO, MWTI, MoF and LTA in climate risk assessment and planning for coastal adaptation. A coastal development guideline will be developed as training material, which will set out the range of suitable adaptation measures for consideration; an evaluation methodology to assess the selected options and guidance on further technical investigations which need to be undertaken as part of the implementation process. Training sessions will involve where possible real live examples drawn from the proposed interventions in the villages and districts covered by this programme. The guideline will contain best practice examples drawn from selected experiences in other Pacific island nations and other suitable locations around the world. Examples of maladaptation will also be included for guidance.

148. Technical study tours will be undertaken as part of the training activities, closely linked to the next Output on knowledge management and exchange, to locations selected for their applicability to the Samoan context.

Output 3.5: Adaptation lessons learned and best practices generated by communities are captured and disseminated nationally and globally through appropriate mechanisms.

149. The following set of proposed activities aim at capturing, analyzing and disseminating programme experience at the national and district levels in a systematic way, from early stages of the programme from the assessment, adaptation planning, implementation, monitoring phases, as well throughout the policy mainstreaming processes. A range of knowledge management products will be developed, tailored to different user groups and disseminated through specific channels and means, including local schools, and supported by a programme communication action plan. It is expected that integrated knowledge management activities will significantly contribute to the replicability and sustainability of the programme results, reaching out to broad layers of society and generations.

150. Activities to be undertaken will involve the development of case studies, photo stories, short videos, posters and brochures (in English and Samoan) on lessons learned and best practices. Regularly distribute these to communities through MWCSO extension services, Sui o le Nu'u briefings and NGOs. A programme communication plan will be developed, to disseminate regular information using range of national and local media. In particular an annual briefing paper for Ministers and Parliamentarians will be prepared on CCA issues and adaptation measures being undertaken via the programme and other related projects.

151. The MNRE web-site will be enhanced with a CCA specific section regularly incorporating info on programme activities, CCA techniques, best practice examples and advice as to where to go for assistance. Knowledge management products will be produced for inclusion in regional and global platforms, such as the SPREP CC portal, or the Adaptation Learning Mechanism (ALM). Presentations on the programme experience will be made at the National Environment Week. At a village and district level the programme will organize exchange site visits between participating communities, for on-site cross-learning experience. Investigations will be undertaken to examine the potential for introduction of community-based ecosystem-monitoring and education programmes (such as the UNESCO-Sandwatch approach being



introduced in the Pacific region).

152. Programme experience will be incorporated in activities of local schools, through school visits, development of materials tailored to students of different ages, including climate change information and programme lessons learnt in appropriate curriculum units for primary and secondary schools.

153. South-South transfer of experience will be established with similar initiatives within the Pacific (e.g. Tuvalu NAPA implementation project implemented through GEF-LDCF and UNDP) in the Caribbean and Indian Ocean, with the involvement of regional centers and organizations, such as the UNDP Pacific Center and SPREP who already have extensive networks engaged in South-South exchange activities.

**B. Describe how the programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.**

**Socio-economic:**

154. The programme is focused upon practical adaptation measures being adopted at the village and district levels including the design and partial implementation of village relocation plans. Approximately 70% of Samoa's population lives within 0.5 km of the coastline (Source SIAM2 reports).

155. Data from the 2006 Census of Population and Housing reveal the following:

- Around 21% of the total population or approximately 38,000 reside in the Apia urban area which is the only substantial urban settlement in the country.
- The remaining 79% of the population are predominantly rural dwellers living in the approx. 270 recognised villages spread across the 41 political districts of the country.
- The vast majority of those villages are located on the coastline or within 0.5 km of the coast.
- Data for population per kilometre of coastline has shown distinct trends of increase for the Apia Urban Area and the north western coast of Upolu whilst those for the remaining districts of Upolu and Savai'i have remained relatively constant indicating a maintenance of the rural populations.
- The rural population are predominantly reliant upon subsistence level agriculture and fishing with low levels of paid employment especially when compared with the Apia urban area and the north western coast of Upolu.
- The rural districts had the highest child and old age dependency ratios in the country as economically active persons had sought paid employment in the Apia urban area.

156. The significance of CC induced changes to the rural coastal environment are potentially significant to the nearly 80% of the country's population. Assets are at risk from continued coastal erosion. The continued further loss of agriculturally productive land will threaten livelihoods and food supply and may force further forest clearance in the more upland portions of catchments contributing to further soil erosion and increased flooding risk.

157. The 25 districts to be covered by the programme have 139 villages (51% of the national total) and an aggregate population of approximately 62,800 (35% of

the national total and approximately 43% of the total rural population) as at the most recent census (2006). The 25 Districts covered by this programme are the more rural regions of the country – the southern and eastern districts of Upolu and a large proportion of the island of Savai'i. Published data from the 2006 Census has limited information on household numbers aggregated by four broad regions. Excluding the Apia urban area and the northwestern Upolu regions, the remaining rural areas contain approximately 6,150 households (approximately 25% of the national total) with an average H/H size of 7.86 compared to the national average H/H size of 7.60.

158. The 25 districts covered by the programme account for some 332km of the national total coastline of 578km. More effective management of the coastal zone will reduce the potential for loss of lives, community and household assets and agricultural production both as a result of extreme events and from the gradual cumulative effects of climate induced changes in the environment. Village relocation plans will decrease losses due to extreme events as a greater proportion of community assets are located outside of identified hazard zones. Enhancements to both the security and quality of water supply will enhance sanitary conditions with resultant community health benefits.

159. As a core consideration, the CIM Plan formulation process was carried out in a highly gender-sensitive manner, involving equally men, women and youth, represented by the matais and village stakeholder groups. The endorsement of the CIM Plans was undertaken similarly by representatives of the key village groups, involving women groups. The implementation of actions under Outcome 1 will be carried out in a similar gender-sensitive and participatory way. The Ministry of Women, Community and Social Development, in charge of coordinating rural development processes, will have a key role in facilitating these consultative processes. To stress these aspects, indicators under Outcome 1 in the Strategic Result Framework are formulated in a gender-specific way.

160. It is expected that the programme will produce the following benefits as specified in the Strategic Result Framework, aligned with the outputs under Outcome 2:

By the end of the programme:

- at least 80km of coastal roads and related infrastructure is improved to withstand climate change and variability-induced stress
- climate resilient shoreline and flood protection measures are introduced in at least 140km coastline and riparian streams, including vegetation planting in at least 60 km coast and 50 km of riparian streams, and beach replenishment techniques piloted in at least 2 sites and 10 Km coastline
- at least 9,000 inhabitants in 15 villages have their water supply and associated infrastructure improved to manage climate-induced impacts on water supply
- at least 80% of the coastal communities involved perceive risk reduction to climate-induced hazards

## Environment

161. The programme will address a number of existing environmental problems in the coastal zone. These include:

- Coastal erosion. Under the investigations undertaken for the CIM Strategy some 68% of Samoa's national coastline of 578km was found to be either extremely vulnerable or vulnerable to coastal erosion.
- Saline intrusion into water courses and wetlands
- Localised flooding
- Deterioration in lagoon and reef based ecosystems, due to sedimentation and siltation caused by runoff and flooding from streams

162. The programme will contribute to the conservation and enhancement of biodiversity mainly as a result shoreline and flood protection activities employing vegetation replanting along the shoreline and riparian streams. This will enhance natural coastal and riparian ecosystems and biodiversity, given that replanting will be conducted using mangroves and a set of native plants. For coastal replanting the following native species are recommended by MNRE: *Barringtonia asiatica* (Futu), *Hibiscus tiliaceus* (Fau), *Calophyllum inophyllum* (Fetau), *Ophioglossum pendulum* (Ifi), *Cerbera manghas* (Leva), *Inocarpus fagifer* (Ifi 'ai), *Crewia crenata* (Fau ui ), *Barringtonia Samoensis* (Falaga), *Pandanus tectorius* (Fala), *Sterculia fanaiho* (Fana'io), *Tephrosia purpurea* (Avasa), *Colubrina asiatica* (Fisoa), *Vigna marina* (Fue sina), *Erythrina variegata* (Gatae), *Intsia bijuga* (Ifilele), *Terminalia catappa* (Talie Samoa). For replanting in riparian stream areas the following native species are recommended: tree species such as *Pometia pinnata* (tava), *Terminalia richii* (malili), *Syzygium inophylloides* (asi toa), *Calophyllum neo-ebudicum* (tamanu) and *Intsia bijuga* (ifilele), *Canaga odorata* (mosooi), as well as shrubs, such as matalafi, masame.

163. Coastal and riparian vegetation planting will also support the conservation of key lagoon and reef areas, by reducing sedimentation and siltation. The continued decline in the health of lagoon and reef ecosystems will put subsistence fishing, which supports a significant number of families in the rural areas, at risk. Increasing sediment loadings in the island fringing lagoons have been identified as a contributing factor to coral die off. The reef also has a critical coastal protection function during cyclones being the first point of contact for storm induced waves.

### **C. Describe or provide an analysis of the cost-effectiveness of the proposed programme.**

164. Cost effectiveness has been an underlying consideration for the formulation of CIM Plans. During this process all potential actions, especially those involving structural works, such as infrastructure climate-proofing or coastal protection structures were subject to a cost-benefit analysis to ensure the value of the assets being protected were greater than the cost of the works proposed. The C/B analysis involved a simple spreadsheet model which applied standard unit rate values for the assets being protected compared to similar standard unit rates for the cost of infrastructure

improved (e.g. seawalls, improved roads, enhanced water supply etc). In addition, the CIM Plans adopted an approach whereby non-structural solutions such as managed retreat, and partial relocation of village assets were considered before any structural adaptation measures. The non-structural options were the “preferred” response under the CIM Strategy, as identified throughout the community consultations and technical assessments.

165. In many circumstances along the coastline of Samoa the predicted level of erosion or coastal inundation, with effects of sea level rise included, is such that wholesale abandonment of entire settlements will not generally be required. Nevertheless, most villages have at least a proportion, generally around 20%, of their current housing stock inside the hazard zones, where climate-induced hazards and impacts can be significant. Most villages have the option of a “managed retreat” away from the hazard zone for their assets most at risk and this represents the most cost effective response in the long term. Given the generally dispersed and scattered nature of the village settlements, relocation of the affected dwellings and other facilities (schools, clinics, churches etc) from within hazard zones to higher ground or even further inland will be the principal form of adaptation required.

166. In some cases the relocation plan will necessitate the construction of additional or replacement structural support – roads, drainage, water and power supply, in order to facilitate individual households to move. Recent and historical experience has been that the provision of infrastructure, primarily roads has been critical to this process. This has been substantiated by recent experiences in eastern Upolu districts following the recent tsunami event.

167. Relocation of portions of villages is considered a cost effective response. The majority of the village resources can remain in place outside hazard zones minimizing social and economic dislocations costs. Although relocation may incur some high initial capital costs, when amortised over the longer term this is considered to be a cost effective option compared to the potential destructive loss of assets and consequent recovery or rebuilding costs, not to mention the potential loss of lives in significant storm events.

168. The costs of inaction are potentially substantial. These include:

- Loss of dwellings contained within hazard zones in the 139 villages in the 25 districts. New dwellings in these zones have been actively discouraged by MNRE under the development consent process.
- Potentially higher risks of loss of lives in cyclone events.
- Loss of cultural assets in particular ancestral and family graves and other places of cultural significance.
- Loss of productive capacity from continued coastal erosion.
- Potential increases in adverse health outcomes from inadequate water supply and un-sanitary conditions arising as a result of more frequent localised flooding.

169. At the operational level, cost effectiveness of the programme concept is reflected through the following considerations:

- Throughout the programme, AF resources will be aligned with the financing and delivery of programme Outputs that have competitive procurement components to ensure best value for money. In this regard, the programme will apply best

practices identified by other, ongoing climate change and development adaptation programmes in the country (e.g. PACC, IWRM).

- This programme will utilize existing government structures and processes for implementation of village-level actions. By building on existing government and institutional structures, the programme will also harnessing in-kind support and contributions from offices at the national and island levels (office space, staff time, communications, etc.)
- The programme will be closely built on existing baseline programmes of line agencies, and will be fully aligned with the institutional arrangements for WB-PPCR implementation.
- The bulk of programme financing will be directed to community-level activities and connect directly to local opportunities for the procurement of goods and services.
- The integrated approach of the programme is designed in a way to attend a broad set of adaptation needs of coastal communities, cross a variety of interrelated sectors in coastal areas, this way resources will be used in more efficient way to cover operational costs in a coordinated fashion within the CIM Plans framework.
- Operational costs will be shared also as much as possible through coordinating with other programmes on-going in the targeted districts

### **Programme sustainability**

170. The Government will ensure the sustainability of the project results by integrating climate resilience and adaptation-related activities in the work programming and budgetary planning processes of the relevant sectors, as part of the climate change mainstreaming aims under Outcome 3, (output 3.4)., supported through capacity building of policy makers and planners on climate risk assessments and adaptation planning processes. The sustained adaptation efforts at the national level will be pursued through the local level institutional strengthening and awareness raising activities in the process of reviewing the village level CIM Plans. These CIM Plans will serve as vehicles for replication of the adaptation measures and experience delivered in the selected villages, as well as for further resource mobilization to secure additional funds in the future.

171. The programme integrates a specific output on knowledge management (Output 3.5) as key part of the sustainability and replicability strategy of the initiative, through systematically documenting and disseminating good practices, linking with school programmes, in order to secure broad dissemination of project results and the transmission of know-how and experience to next generations of community practitioners, government planners and policy makers.

172. To ensure effective coordination of the programme with related initiatives, existing coordination and institutional mechanisms will be harnessed at the national level, such as the National Climate Change Country Team, the Ministry of Finance and THE Ministry of Women, Community and Social Development.

173. A key feature of the design of this programme has been to build upon either existing institutional processes, structures and frameworks and further strengthen them throughout the programme for the long-term maintenance of its results. Key features include:

- Use of the proposed PPCR Steering Committee to oversee both the PPCR Project and this programme. Membership of that Committee covers the key stakeholders for both that project and those needed for functional oversight of this programme.
- Location of the PMU and technical support teams for the programme within the Planning and Urban Management and Land Management Divisions of MNRE as the main executing agency for the programme. This will also allow close coordination with related initiatives, such as the PACC project with the project management unit located within PUMA. MNRE has a technical leadership role in CC adaptation and mitigation within the Government and this will reinforce this role. This will also provide for the opportunity for MNRE to consider absorbing the functional roles within the Ministry once programme funding has been expended,
- The potential for the programme to support and reprioritise existing works programmes actions and expenditure of other agencies such as LTA and SWA in support of the implementation of the recommendations of the CIM Plans has also been a relevant factor in design. LTA for example already has an annual programme for the sealing of rural plantation roads. With the completion of village relocation plans there will be a framework for a meaningful dialogues to occur between MNRE and LTA as to how their expenditure priorities and budgetary planning processes could be adjusted to support adaptation measures in the long-term, beyond the current programme duration.
- The proposed use of private sector resources to design and implement the bulk of the structural adaptation works will increase domestic capacity for such work in future and the development of enhanced procurement and contracting capacity in MNRE will facilitate the continuation of the works programme.

**D. Describe how the programme 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 programmes of action, or other relevant instruments, where they exist.**

174. Figure 5 below provides a timeline for relevant Government of Samoa Reports on Climate Change. These are shown in the international context of reports of the Intergovernmental Panel on Climate Change (IPCC). The figure shows that Samoa has been proactive in its assessment of climate change impacts, vulnerabilities and identification of current and possible future adaptation measures. There are a number of policies and directives which are seeking to address the implications of climate change for the country, and the integration and co-ordination of efforts to mitigate and respond to it.

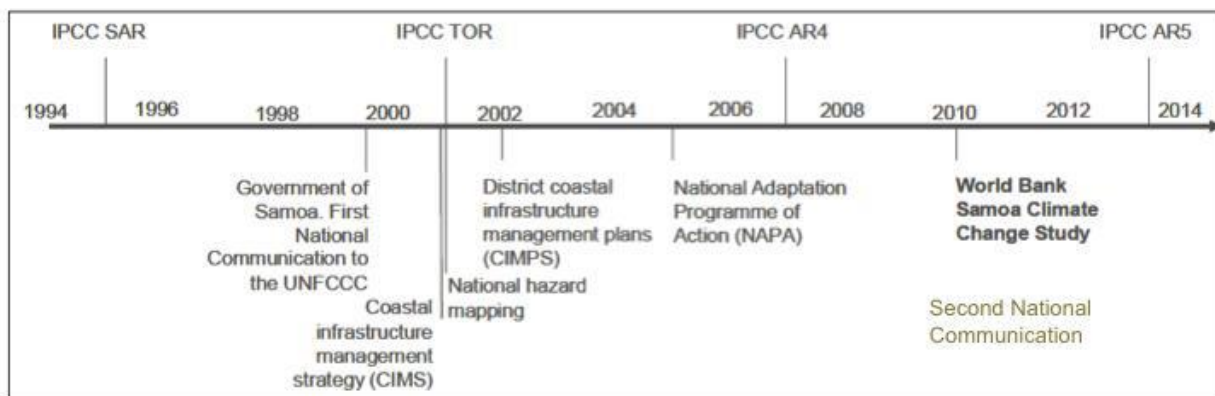


Figure 5- Timeline of relevant Government of Samoa and IPCC reports.  
Source: Adapted from Beca International, 2010b.

175. Samoa has developed a framework of strategies, plans and governance structures that are best practice in the Pacific region. Climate change adaptation is reflected as a priority in many high level plans and strategies. The Strategy for the Development of Samoa (SDS) for 2008-2012 provides the high level framework for economic and social development. The SDS identifies seven key development priorities:

- sustained macroeconomic stability;
- private sector-led economic growth and employment creation;
- improved education outcomes;
- improved health outcomes;
- community development including improved village governance;
- improved public sector governance; and
- environmental sustainability and disaster risk reduction.

176. It identifies climate change adaptation as a cross cutting issue alongside environmental sustainability. The links between the SDS and the NAPA, including reporting relationships, are shown in Figure 6 below



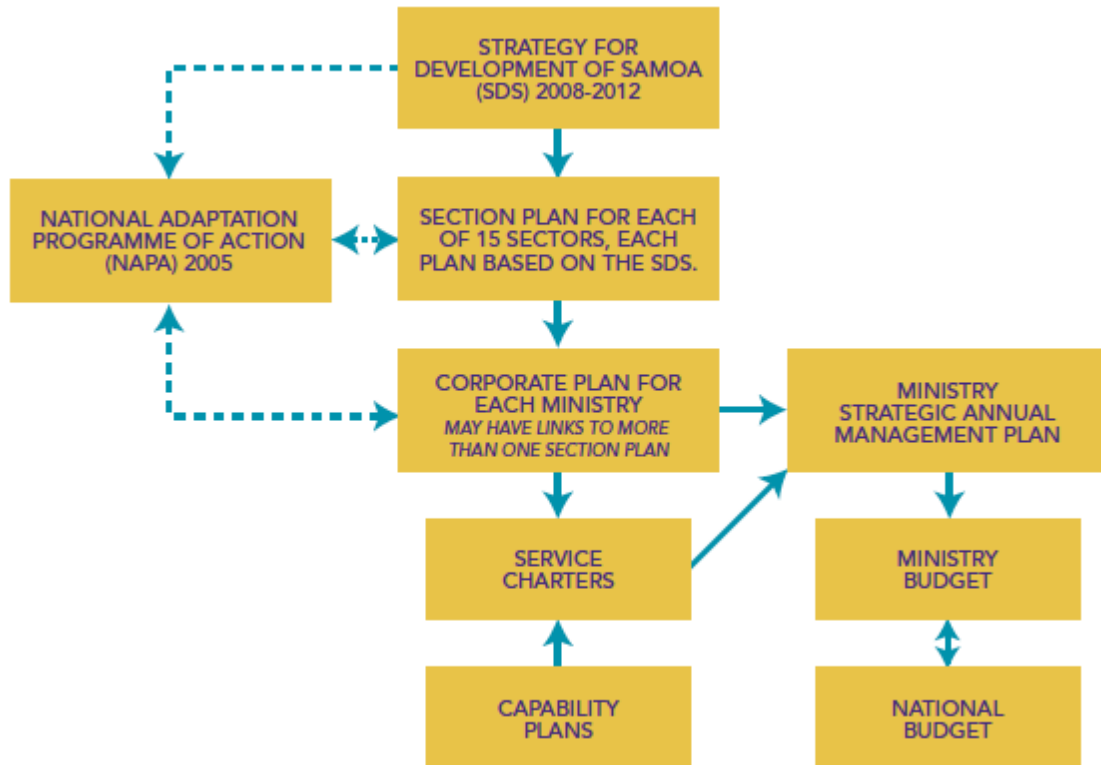


Figure 6- Links between the Strategy for the Development of Samoa (2008-2012) and the NAPA. Source: The World Bank Group, 2010.

177. The Strategy for the Development of Samoa (SDS) 2008 – 2012 provides the macro-economic framework and vision, national development goals and the strategies required to achieve those goals. Under goal 7 of the SDS, environmental sustainability relates to the importance of climate change adaptations and mitigations actions required to respond and be prepared for climate change so as to increase climate resilience of the Samoan population. Climate change is a key environmental issue that is highlighted as it affects multiple sectors and requires a whole of government approach. The funding strategy for the SDS is both via national budgetary financing (including external development partners assistance) and through commercial financing from the private sector.

178. The Samoa Coastal Infrastructure Management Strategy (2001, updated in 2007) defines national and local priorities for coastal management and sets policies and implementation methods for disaster risk reduction and climate adaptation measures. They are seen by Government as a key adaptation initiative. Similarly, the National Infrastructure Strategic Plan (currently a final draft stage) considered climate change adaptation and disaster preparedness when screening possible projects for strategic alignment and for benefits.

179. Currently climate change policy mainstreaming processes are ongoing in the agriculture, health, forestry, coastal and tourism sectors through a set of NAPA implementation processes supported by UNDP and bilateral donors. The proposed



programme will create synergies with these initiatives to integrate climate-resilient development processes in coastal zones.

180. Overall it is considered that this AF programme proposal is in support of and consistent with all of the current policy formulation and implementation work being undertaken in Samoa.

181. The CIM Strategy and Plans have been aligned with the Strategy for the Development of Samoa (SDS) for 2008-2012 which provides the high level framework for economic and social development. The SDS identifies seven key development priorities: sustained macroeconomic stability; private sector-led economic growth and employment creation; improved education outcomes; improved health outcomes; community development including improved village governance; improved public sector governance; and environmental sustainability and disaster risk reduction. It identifies climate change adaptation as a cross cutting issue alongside environmental sustainability.

182. The Climate Change Policy (2007) statement that aims to enhance Samoa's response to the impacts of climate change in support of national sustainable development efforts. The objectives seek to raise public awareness; strengthen management of climate change information; capacity building at public, private and community sectors; implement mitigation and adaptation measures; as well as establish a regulatory framework to facilitate responding to climate change.

**E. Describe how the programme meets relevant national technical standards, where applicable.**

183. Samoa has been proactive in its assessment of climate change impacts, vulnerabilities, and in the identification of current and possible future adaptation measures. There are a number of policies and directives which are seeking to understand the implications of climate change upon the country, and the integration and co-ordination of efforts to mitigate and respond to it.

184. Key legislation and policies that are relevant in this regard are:

*National Adaptation Plan of Action (2005) (NAPA)*

185. The NAPA provides an overview of climate change impacts and vulnerabilities, identifies adaptation strategies and outlines the process used to select and prioritise specific adaptation projects for priority sectors.

*Planning and Urban Management Act (2004)*

186. This Act is administered by the Ministry of Natural Resources and Environment (MNRE). The Act broadly defines development and considers its impacts on the "total" environment (social, economic and bio-physical). The objectives are to provide for the fair, orderly, economic and sustainable use, development and management of land including the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity; to enable land use and development

planning and policy to be integrated with environmental, social, economic, conservation and resource management policies at national, regional, district, village and site specific levels; to create an appropriate urban structure and form for the development of Apia and other centres so as to provide equitable and orderly access to transportation, recreational, employment and other opportunities; to secure a pleasant, efficient and safe working, living and recreational environment for all Samoans and visitors to Samoa; to protect public utilities and other assets and enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community; and to balance the present and future interests of all Samoans.

187. To meet these objectives, the Act provides, amongst other mechanisms, a process for the development of sustainable management plans and various co-ordination, education and promotional roles. In respect of the plans, a hierarchy of national, regional, district and village sustainable management plans is in place. The Act does not make any specific references to the effects of climate change or climate change adaptation, its wording may however be, in the main, specifically broad as to encompass those matters in its enactment.

#### *Planning and Urban Management (Environmental Impact Assessment) Regulations 2007*

188. The Regulation provides the process required to assess the environmental impacts of any development works. This regulation is developed as per the Principal statute, to facilitate the requirement for environmental assessment reports as one of many key considerations when assessing development proposals. The proposed programme will be fully aligned with these procedures and will further strengthen them through supporting the integration of climate change and DRM considerations during a formal review process.

#### *National Policy to Combat Climate Change (2007)*

189. The National Policy Statement on Climate Change is administered by the Ministry of Natural Resources and Environment. The policy outlines Samoa's response to climate change. It provides a national framework to help reduce the rate of global climate change as well as the adverse effects of climate change on Samoa by adapting to its impacts.

#### *Disaster and Emergency Management Act (2007) and National Disaster Management Plan (2007)*

190. The act is administered by MNRE. It requires the development of a National Disaster Management Plan (NDMP). The NDMP must include a comprehensive risk profile for all parts of Samoa and the arrangements to be implemented to reduce risk as well as preparedness, response and recovery arrangements. The definition of Disaster includes "(i) any naturally occurring event affecting the whole or any part of Samoa". The plan recognises climate change, sea-level rise, environmental degradation, pollution, coastal erosion, water quality and resource management as important environmental issues being managed by Samoa.

191. The emphasis of the disaster management plan are on those hazards that have the potential to create a significant disaster in Samoa, and would most likely require some degree of government coordination to manage. The framework of the plan includes

identification and ranking of risks, risk reduction and contingency planning, and recovery. Whilst “climate change” per se is not identified as a discrete risk, key components of it are identified: cyclone, environmental crisis (invasive species), flood, landslide (e.g. as might be caused through extreme rainfall events), single asset failure – dam (e.g. as might be caused through exceedance of spillway design capacity), drought. A schedule of disaster risk reduction activities is maintained, and the agency responsibilities and relevant tools (e.g. legislation) identified. The Plan has been prepared with a maximum review timeframe of three years, and for identification and management of foreseeable threats and events of significant magnitude.

192. While the Plan considers risks around climatic events (e.g. cyclones, heavy rain, storm surges), it appears that consideration of long term incremental risks falls outside of the plan’s coverage – intentionally or otherwise. National contingency plans to address risks of more immediate concern (e.g. tsunami, flooding and fires) are noted as —“not yet drafted” (the Invasive Species national contingency plan is complete), and this does suggest the long term incremental issues may not yet have received increased attention.

#### *Coastal Infrastructure Management Strategy (2007) and Plans*

193. The first Coastal Infrastructure Management Strategy (2001) provided a series of national and local principles for coastal management. The strategy developed objectives, policies and implementation methods for hazard and environmental information gathering and monitoring, education and awareness raising, use and management of resources and for undertaking intervention actions. The CIM Strategy also set out the need for Coastal Infrastructure Management Plans (CIM Plans), and defined goals, objectives, policies and implementation methods across a broad range of coastal considerations. The Strategy was revised and updated in 2006 to incorporate CC considerations.

#### *Samoa National Infrastructure Strategic Plan (SNISP)*

194. A draft Samoa National Infrastructure Strategic Plan has been prepared and is currently under consideration by key stakeholders. The Plan outlines the Government’s priorities and strategic directions for major initiatives in the economic infrastructure sector over the coming five to ten years. This is the first such Plan. It is the Government’s intention that it will be updated regularly as part of the national planning and budget process. This Plan covers infrastructure initiatives with national significance. It looks at the next five years (to 2015) in detail and the five years from 2015 to 2020 in terms of broad directions for infrastructure development. The Plan is the result of extensive consultation with infrastructure managers, users and development partners.

195. The Plan recognises that environmental sustainability, climate change adaptation and disaster risk reduction are key Government goals and a foundation theme of the SDS. These issues have implications for many economic infrastructure sectors. Many of the specific infrastructure development initiatives in the plan have significant climate change adaptation and disaster risk reduction outcomes, including tsunami reconstruction programmes, improved water resources management, all-weather roading programmes and projects to ensure continued airport operations under extreme conditions.

196. The funding mechanisms under SNISP will be focused on improving infrastructure asset management via strategic asset management to ensure capital improvement works have an asset life-cycle approach to costing and maintenance of new and existing infrastructure. A range of financing options include public financing and commercial financing via public private partnerships.

197. The policy and legislative framework set out in the above technical standards provides a structure within which the AF programme will be executed. There is a high degree of consistency in the Planning and Urban Management Act (and supporting regulations) and the Disaster and Emergency Management Act (and supporting National Disaster Management Plan) both of which were developed over a similar timeframe and both of which have now been operational for the last 4 years. The NAPA and the National Policy on Climate Change provide an overall policy framework to the legislation and the CIM Strategy and Plans are consistent with this framework. The technical studies needed to support compliance with the above regulations will be conducted as integral part of the programme implementation, the preparation of site-specific assessments and design starting in early stages of implementation. These will be supported through the technical assistance provided by established government procedures, and through expertise sourced from the proposed programme for the needed technical assessments, planning and design processes.

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

198. This section of the proposal has focused upon those initiatives, projects and programmes which have a direct impact upon the coastal zone. The strongest link is with the complementary programme of actions to be undertaken under the CRIP/PPCR WB funded project. This AF programme has been designed to be directly aligned with that, particularly in respect of institutional co-ordination. The National Climate Change Country Team (NCCCT), which is active in the country and chaired by MNRE, ensures the timely and effective coordination of the various ongoing and pipeline initiatives, which is also reflected in the programmatic approach to the implementation of NAPA priorities. The multi-donor contributions are well coordinated by the Aid Coordination Division, located in the Ministry of Finance (MoF), along with the stringent approval process of donor-funded initiatives by the Cabinet Development Committee.

Initiative	Status, results, limitations	Complementarities to proposed AF programme
WB-PPCR	The objective of the PPCR is to pilot and demonstrate ways to integrate climate risk and resilience into core development planning, while complementing other ongoing activities. Phase 1 is focussed on enhancing Samoa's capacity for climate risk management and expanding the mainstreaming agenda and developing the Climate Resilience Investment Programme (CRIP). The CRIP will be implemented during Phase 2 with investments made through both the public and private sectors. The investment phase will enhance the climate resilience of the	PPCR will only fund part of Samoa's adaptation costs. The programme will implement revised CIM Plans in conjunction with other related planning frameworks such as Sustainable Management Plans and Village Disaster Risk Management Plans in at least 16 districts, the eight adjoining the Apia – Airport road, and eight others, based on the CIM Plan review to be undertaken. In the eight or more districts in other parts of the country (not adjoining the

	<p>west coast road, and enhance climate resilience of coastal resources and communities.</p> <p>Samoa is involved in the PPCR as one of the 3 pilot countries in the Pacific regional project. The process is being coordinated by the Ministry of Finance, with coordination mechanisms in place involving MNRE and other ministries. UNDP has been involved since early stages of the PPCR process, and has been advocating for linkages with existing and pipeline NAPA implementation and related development assistance initiatives. PPCR in Samoa has recently completed its Phase 1 design, and defined a Strategic Programme for Climate Resilience. The Programme focuses on coastal adaptation and related infrastructure measures with the following investment projects and components:</p> <ul style="list-style-type: none"> <li>• Investment Project 1: Enhancing the Climate Resilience of West Coast Road, Samoa,</li> <li>• Investment Project 2: Enhancing the Climate Resilience of Coastal Resources and Communities <ul style="list-style-type: none"> <li>○ Component 1: Implement CIM Plans to Manage Climate and Disaster Related Threats</li> <li>○ Component 2. Knowledge Management</li> <li>○ Component 3. Support to Civil Society Organizations</li> </ul> </li> </ul> <p>The West Coast area proposed under Investment Project (1) does not coincide with the proposed 4 Tourism Development Areas (TDAs) in the LDCF project, but will indirectly support tourism sector adaptation, given that West Coast Road is the main access between Apia to the Airport, vital for tourism purposes. More direct linkages will be established during the PPG phase with the components of Investment Project 2 of PPCR, to create synergies in supporting communities in the proposed TDAs, and through overall coastal adaptation processes and techniques linked with the implementation of CIM Plans.</p>	<p>Apia – airport road), CIM plans would be selected based on vulnerability and cost effectiveness criteria being developed by the on-going prioritization exercise currently being carried out.</p> <p>The AF programme will complete the balance of the 41 districts not covered by the CRIP/PPCR. This geographic alignment will be complemented by a strong thematic alignment as both are implementing the actions previously identified in the highly participatory CIM Plan formulation process. There will be strong institutional co-ordination through a shared Project/Programme Steering Committee as well as significant knowledge sharing between the two programmes.</p>
<p>SIAM2 (CIM Strategy and Plans)</p>	<p>Prepared in 2000-03 and 2004-07 the Coastal Infrastructure Management Strategy has been adopted as Government policy. It is based around a theme of increasing “resilience” of coastal communities. Improvements have been identified through Coastal Infrastructure Management Plans which have been completed for all 41 Districts.</p> <p>Implementation of recommended actions to be undertaken for 16 Districts (8 along NW Coast of Upolu adjacent to West Coast Road plus 8 other</p>	<p>Sets up a basic framework of identified adaptation priority actions on a District and Village basis. PPCR will be targeting 16 Districts and the AF programme will cover the balance of 25 districts to ensure a “whole of country” approach is achieved.</p>

	<p>priority Districts yet to be selected) under Investment Project 2 of PPCR. SIAM 1 plans for 15 Districts need updating to reflect SIAM 2 content and process enhancements.</p> <p>CIM Plans to be retitled to reflect broader intent/purpose under PUM Act and “ridge to reef” concept.</p>	
SIAM2 –Overall Update, Review and Prioritisation of CIM Plan Works	<p>This recently completed project updated the current progress on implementation of the CIM Strategy and Plans, developed a system for prioritising CIM Plan works and reviewed capacity and capability in various ministries and agencies to implement the recommended works.</p> <p>The overall conclusion was that good progress had been made in implementing a number of the SIAM2 C4 recommendations, that works prioritization should consider a range of criteria and that implementation capacity was limited within existing ministry and authority structures and staffing. Recommendations were made to mobilise a greater input from the private sector in works design and execution/supervision.</p>	The recommended implementation structures for this programme are a continuation of the recommendations developed in the review and are consistent with it.
NAPA-2 PACC-Coastal	<p>PACC is a regional GEF funded programme executed through SPREP, involving 13 PICs. In Samoa PACC is implemented by MNRE in collaboration with relevant government and non government organization. (LTA, SUNGO, MWCSO, MOF and other stakeholders. The main aim is to increase the resilience of the piloted coastal and riverside communities to adapt to the impacts of climate change through the construction and implementation of integrated coastal protection mechanisms comprising of both structural works and soft measures. Moreover one of the project aims is to mainstream climate change into national and local development plans and policies hence review of the Sandmining and Reclamation policies which govern issues pertinent to building resilience of the sector. One of the important components is the enhancement of the Climate Early Warning System for the coastal sector, through strengthening the capacity of stakeholders to analyze the climate information extracted and plan adaptation accordingly.</p> <p>Currently the following is being developed including :</p> <p>A integrated community bylaw for Tafitoala to manage the water resources and river adaptation,</p> <p>Coastal Adaptation Strategy and a</p>	The AF programme will build on the PACC experience and support its replication and upscaling in the 25 target districts, while contributing to the further strengthening and completing of the demo technical guideline and village regulatory (by-law) applications being pursued through the pilot interventions.

	demonstration guideline.  The project pilot sites are Tafitoala, Afega and Vaisigano in Upolu, and Lefagaoalii and Lalomalava in Savaii. The project lifespan is from 2009 to 2012.	
Community-centered Sustainable Development Programme (CCSDP)	Designed to make communities more self-reliant, both economically and socially, by improving and supporting livelihood options through the responsible use and management of the environment that at the same time founded in human rights principles and cognizant of the contributions of and benefits to men, women, boys and girls. Using Appreciative Inquiry Methodology and recently the Assets Based Community Development methodology, with Participatory Rural Appraisal tools, communities were able to develop a -Sustainable Village Development Plans (SVDPS) highlighting different areas of concerns. Priorities were therefore related usually to education, health, economic development and tourism, agricultural and fisheries, environmental development and sustainability. Project has completed Sustainable Village Development Plans for 25 villages. Resources including Agricultural and Fishery equipment have been distributed; A computer centre has been set up in Upolu (Utulaelae) and Savaii (Satufia to Coastal replanting has been completed for all the project pilots, Lano, Manono Island and Mutiatele and Malaela. All to implement some of the priorities as indentified in teh SVDPs.	Capacity development involved strengthening community capacity to adapt to climate change as well as social organization, human resource development, improved local governance and training of trainers. This has led to encouraging coastal replanting as a response to coastal erosion and climate change, in all communities CCSDP has been working with. The Sustainable Village Development Plans formulated through CCSDP will be fed to the CIM Plan review process, especially considering the need to integrate DRM considerations to 1 <sup>st</sup> generation CIM Plans and the need to broaden coastal planning from the narrow coastaline, through taking a watershed and reef-to-ridge approach. The rural appraisal participatory techniques successfully applied in CCSDP can be employed in the CIM Plan review and village hazard zone relocation processes.
Tsunami Recovery	Early To rebuild national and community infrastructures, and rehabilitate livelihoods, socio-economic developments and services which were affected by the tsunami of September 2009. The activities of the recovery plan spreads across all sectors and sector agencies in charge of the various networks that were damaged and or affected by this tsunami. The programme is for 3 years and each sector and agency have its own recovery plan containing activities and outcomes. For the MNRE recovery plan, this covers environment rehabilitation which includes marine and terrestrial resources, construction of hard solutions such as seawalls and river embankments and rehabilitation of village springs. This also includes coastal replanting to reinforce structural preventative measures such as seawalls. Surveys of invasive species have been conducted regularly to monitor new species that may have been brought in by the tsunami waves and or the imported relief	Although tsunami is a geo-physical hazard, the preparedness and response measures are very similar to those induced by climatic effects, such as cyclones and storm surges. The AF project will build on the tsunami recovery and preparedness measures implemented in affected communities, especially when it comes to the revision of the 1 <sup>st</sup> generation CIM Plans to integrate DRM considerations, and for the support of related institutional capacities.

	<p>supplies. For the DMO recovery programme, the activities include hazard identification, assessment and mapping such as the tsunami mapping and modeling conducted by GNS New Zealand, strengthening community preparedness through the development of village disaster management plans, public awareness, construction of evacuation routes in high risk villages, construction of the national emergency operation center; strengthening of the public early warning system which includes the installation of siren network, using of cell broadcast as the means of sending alerts to all mobile holders/owners, on-line computers, public radio stations, and new digital UHF radio network; and lastly coastal management activity. So far, the progress to date about 50% have been completed for environment rehabilitation recovery programme while the DMO recovery is about 30 to 40% complete.</p> <p>The UNDP ER project focused mainly on Rehabilitation of livelihoods through investment in green enterprise and alternative and sustainable long-term skills transfer among individuals and communities affected by the tsunami, through amongst others the establishment of an MDG volunteer corps. Improved disaster risk reduction and climate change adaptation that strengthens adaptive capacity and resiliency at community level through participatory AI/PRA method Strengthened early recovery coordination through partnership to mobilize resource Strengthened local governance systems to lead and coordinate the implementation of early recovery interventions by adapting the concept of volunteerism.</p>	
<p>UNDP/GEF/UNV– Community Based Adaptation and (delivered through GEF/Small Grants Programme)</p>	<p>This Programme is helping assist communities in dealing with Climate Change issues. The programme recognizes that the people in small communities are the most severely affected by climate change impacts, but are often the least equipped to cope and adapt. It is therefore the priority of the programme to build the resilience of the communities to adverse effects of Climate Change in various areas such as sea level rise, coastal erosion, land degradation, flooding and other areas identified in the Samoa country analysis.</p> <p>The CBA programme seeks to encourage systematic change in national adaptation related policy through evidence based results from a</p>	<p>The AF programme will effectively serve to upscale and replicate such community-based experiences across the target 25 districts, and to further facilitate the practical implementation of such measures through the community engagement processes. There will be important synergies and cross fertilization created in the technical expertise on community-based solutions and in the knowledge management activities. E.g. application of a participatory video technique piloted successfully in the SGP-CBA project in Samoa, facilitating communities to record</p>



	<p>portfolio of community driven climate change risk management projects. The programme promotes global learning related to community adaptation by sharing lessons from a range of initiatives focusing on natural resource management.</p> <p>The programme is a collaboration led by the UNDP with financing from the Global Environment Facility (GEF). The GEF Small Grants Programme (SGP) is the delivery mechanism. The UN volunteers has partnered with UNDP and GEF-SGP to enhance community mobilization, recognize volunteers' contribution, and ensure inclusive participation around the project, as well as to facilitate capacity building of partner NGPs and CBOs. In addition, funding is provided by AusAID of the Government of Australia.</p>	<p>their perceived impacts on climate change risks. See under Media section at:</p> <p><a href="http://www.sgpsamoa.ws/">http://www.sgpsamoa.ws/</a></p>
SIAM2 Small Grants Scheme	<p>The Small Grant Scheme is part of SIAM2 to aid mechanism for financing local communities involved in non structural solutions that are low cost, small scaled and requires low tech. The RAMSGS intends to strengthen the resilience of local coastal communities to withstand the impacts of natural hazards through the implementation of low cost and small scale nature of many non structural activities with the local communities. These non structural measures include the restoration of shoreline assets and marine natural resource systems that play a key role in coastal protection and same time provide economically to community livelihood.</p> <p>Add some info on project implementation results</p>	

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

199. Recognizing the importance of knowledge management (KM) to enhance impacts and facilitate replication, this initiative integrates various KM related actions. During and after the AF project Samoans will know more about climate change and its likely impacts on the country, know about the range of measures to enhance resilience of coastal settlements and understand the importance of undertaking land use planning that integrates climate risks. Lessons will be documented by project staff under the direction of the National Programme Co-ordinator who will be specifically supported by a Communications Specialist;. Project learnings 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 in the Samoan language; 2) training modules generated from project case

studies and demonstrations will be used well after the project ends by young Samoans through units developed for the school curriculum ; 4) the MNRE website will contain specific programme reference material and links to other relevant CCA projects and programmes worldwide with applicability to Samoa;5) national level training workshops will be held to facilitate peer-to-peer exchange of knowledge. 6)Web-based platforms such as the Adaptation Learning Mechanism at [www.adaptationlearning.net](http://www.adaptationlearning.net) will be accessed to share information and also promoted within the country.

200.The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to support the diffusion of lessons learned.

#### **H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation**

201.This programme is designed to be complementary to the PPCR project and between the two programmes, a “whole of country” response to CCA will result. Key target actions are to implement the actions recommended in the CIM Plans. During the development of the CIM Plans an extensive programme of direct community and affected stakeholder consultation was undertaken. Overall our estimate is more than 15,000 persons were directly involved in this process under IAMP-1 and SIAM 2 CIM Plan activities during the period of 2001-2008 in various stages. This represents approximately 10% of the total population of the entire country and if the very young and very elderly are excluded could be approaching 20% of the economically active/adult decision making population. This is a very high proportion of a population to be engaged in such an exercise on a world scale.

202.During the formulation of the CIM Plans which underpin this programme the following Government ministries and agencies were involved, and supported the realization of the extensive community consultation process:

- Ministry of Natural Resources and Environment (MNRE)
- Ministry of Women, Community and Social Development (MWCSO)
- Ministry of Works, Transport and Infrastructure (MWTI).
- Land Transport Authority (LTA)
- Samoa Water Authority (SWA)
- Electric Power Corporation (EPC)
- SamoaTel
- Ministry of Finance (MoF)
- Ministry of Education, Sports and Culture (MoE)
- Ministry of Health (MoH)

203.The CIM Plan formulation process involved representatives of all key vulnerable groups in the communities, including the matais (both men and women), women and youth groups. A consultation process at the district and village level comprised the following:

The following summarizes the generic approach to developing a CIM Plan.

Coastal Hazard Maps (i.e., flooding, erosion, landslips, and sensitive areas) and other awareness material are prepared in advance of community and stakeholder engagement.

#### *National Stakeholder Workshops*

Public and private sector stakeholders workshops are held to discuss their annual work plans to highlight infrastructure and environmental issues. These workshops are held prior to engaging with the relevant village and district communities to ensure information accuracy on utility locations and future improvements.

#### *Village Meetings*

The village consultation begins with formal traditional protocols such as the *ava* ceremony held at a village meeting *fale* before the Council of Chiefs (collection of *matai*). The ceremony includes ceremonial speeches and traditional protocols. Subsequently, the project team provide the overview of the project scope and discusses generic and site specific climate change issues as it relates to the coastal environment and the wider catchment. Following these introductory statements, focused groups consisting of *matai*, women and untitled men/youth are used to solicit further information. In some situations, social divisions are created to ensure that all voices can and are heard.

Ministry staff and project members facilitated the discussions to ensure the consultative process confirms issues and considers potential solutions.

A site visit ('walk-through') is typically held to ensure that data is collected for further analysis.

#### *District Meetings*

Following, village consultations, village representatives are selected to serve as members of the District-wide group of advisors. A district meetings are called within the district to the matters raised in village discussion to ensure coordination and integration of thematic needs that are to be prioritized.

#### *Drafting and Finalization of CIMP*

Following the special consultative process, a draft CIM Plan is prepared for final review and comment by the District representatives. Note that the CIM Plans include a range of issues and specific actions required to be carried out to ensure climate resilience. The CIM Plan will include the Plan Development process undertaken as a separate report together with the Implementation Guidelines. Once the submission period has closed the final draft is then prepared for official signing of the CIM Plan as an agreement between Districts and the Government of Samoa. This then becomes a guiding document for funding opportunities both for the public authorities and the community groups.

204. Following a set of coordination and scoping meetings with MNRE and an initial meeting with the National Climate Change Country Team, two National Workshops have been held in preparation of this project. The first, an Inception Workshop was held on 25 March 2011 and was attended by key national agencies and NGO representatives, as part of the NCCCT. The purpose of this session was to outline the AF requirements; to seek agreement on a programmatic approach for the proposal; to seek inputs on key programme components and to provide a framework for subsequent consultation.

205. The second Workshop was held on 22 June 2011 and attended by 13 participants. At this session the draft Proposal was discussed in detail having been pre-circulated to attendees. The draft Proposal was endorsed by the Workshop as suitable for submission to the AF Secretariat as a draft application for comment and in-principle support.

206. The following key stakeholders were consulted during the formulation of this programme proposal:

- Ministry of Finance
- National Climate Change Country Team
- Ministry of Natural Resources and Environment ( GEF Division, PUMA, Technical Division, CCA Co-ordinator. Land Management Division)
- Ministry of Women, Community and Social Development
- Ministry of Works, Transport and Infrastructure
- Land Transport Authority
- Samoa Umbrella of Non-governmental Organisations (SUNGO)
- United Nations Development Programme
- South Pacific Regional Environment Programme

A summary of meeting and workshop discussions is set out in **Annex 7**.

#### **Criteria to select communities for implementation**

197. Coastal infrastructure is one of the main objectives of the CRIP/PPCR through one of the pilot investment projects for Samoa. This project aims to build on the efforts of the CRIP/PPCR in order to achieve a nation-wide approach with an impact in every district. The World Bank project is already covering 8 districts on the North coast of Upolu and another 8 outside of this area.. This project will focus on those areas not covered by the CRIP/PPCR to ensure global coverage and coordination of implementation.

198. As a “whole of country” approach is being developed through the complementary programmes under CRIP/PPCR and this programme, it has not been necessary to select communities for implementation. The intention is that all communities will be eventually covered under either programme.

199. For the initial preparation of the first 15 CIM Plans under IAMP1 a priority selection was made of a representative sample of the differing types of coastal environments in order for the project to deliver a wide range of potential adaptation responses. There was also a political balance made between the two main islands. The IAMP1 CIM Plans require updating to incorporate DRM village response plans and enhanced consultation protocols further developed in SIAM2 and it has been proposed that the bulk of the IAMP1 CIM Plans are included in the CRIP/PPCR programme with the balance (6 districts) under this programme.

200. Under Contract C4.0102 Additional Works of the SIAM2 project a prioritisation system has been developed to apply to the works recommended in the CIM Plans to

ensure the most effective and relevant works are undertaken first. The criteria to be applied are:

- Is the proposed development in general accordance with the objectives of the CIM Plan?
- Is the development specifically recommended in the CIM Plan?
- What is the number of people that will benefit from the development, i.e. population benefit?
- Will the development provide life sustaining support for communities?
- Are there likely to be significant adverse environmental effects?
- Will the development complete works that have already started?
- Will the development improve resilience?
- Will the development achieve speedy recovery?
- Will the development reduce risk?
- Has the proposed development been identified in a Village Sustainable Development Plan?

197. A scoring system has been developed to allow the application of these criteria to rank competing projects within a district or village and between districts or villages. We propose to apply this prioritisation methodology to this programme.

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

#### **Component 1: Community-engagement in coastal vulnerability assessment, adaptation planning and awareness**

##### **Baseline**

198. Community awareness of coastal vulnerability and adaptation planning has commenced as a result of Government actions and was particularly enhanced at the village and district level during the preparation of the CIM Strategy and CIM Plans. However since the formulation of the plans, other than the plans being used as a basis for land use planning administration under the Planning and Urban Development Act by MNRE, little implementation of the recommended actions to improve community resilience has taken place. As a result, the gains in community engagement arising from the consultation process during the CIM Plan formulation are fast being eroded.

199. New village leaders are always being appointed and it is unlikely that awareness of coastal vulnerability assessment and adaptation planning are being passed on in any formal manner. In addition the community's faith in the underlying partnership approach of the CIM Plans, signified by the joint signing of plans by the village representatives and government, is likely to decrease the longer it is before concrete evidence of implementation of identified adaptation measures is delayed. Without the AF resources facilitating the re-engagement of communities and implementation of CIM Plans, the momentum and level of awareness raised at coastal communities to address coastal development issues integrating climate risks will be significantly diminished.

200. There is currently no comprehensive programme for community

engagement in coastal vulnerability assessment and adaptation planning. The CRIP/PPCR programme will address only 16 of the 41 districts in Samoa leaving 25 potentially not covered.

### **Additionality (Adaptation cost reasoning)**

201. The complementary nature of this programme allows a whole of country approach to community engagement on coastal vulnerability assessment and adaptation planning. The programme will build upon the gains made in the CIM Plan process and will allow for the reinforcement of key messages delivered in that project.
202. The CIM Plans prepared under IAMP1 will be updated to reiterate the climate change factors and DRM response planning that were developed in the CIM Plans produced under SIAM2. The review will present an opportunity to update the plans considering the latest available climate change projections and data. This will bring all districts in the whole country on to a common base and will ensure adaptation activities are taken in a co-ordinated and climate resilient manner.
203. The further enhancing of community engagement in the 25 districts to be implemented under the programme will ensure a common approach has been developed and applied to the country for all districts covering a “ridge to reef” approach.
204. The preparation and implementation of village hazard relocation plans in 15 villages, through community engagement and participatory processes, will serve as a valuable pilot for further actions required to relocate village assets out of hazard zones in the balance of villages. The development and recording of practical implementation methodologies in these plans will also facilitate the construction of supporting infrastructure which has been shown in the past to be a powerful prompt to relocation action. Piloting this process will pave the way to an approach which can be a more cost-effective and safer option, or representing the only viable option in many cases, in terms of protecting community assets and human lives in the long term, considering the projected climate change trends with increasing severity and intensity of climate-induced extreme events.
205. The training of village leaders in the CIM Plan review process and the relocation planning process integrating climate risks will facilitate the further transmission of those messages into the community building knowledge and understanding at the village level. Reinforcement of the key themes and messages developed and delivered under the SIAM2 CIM Plan process, modified as necessary to increase the focus upon climate change induced impacts.

## **Component 2: Integrated Community – Based Coastal Adaptation and Disaster Risk Management measures**

### **Baseline**

206. CIM Plans have been prepared as a framework of community based adaptation and DRM measures for the whole country. Some limited measures have been implemented as a result of other programmes such as the Tsunami Early Recovery project, the PACC Coastal Project, the CCSDP and MAP-SGP-CBA initiatives. However all of these initiatives, whilst not inconsistent with the CIM Plans and contributing to the increase in resilience in the project locations, have been limited to a smaller number of villages and districts, often on a pilot basis, in a

piecemeal fashion, falling behind to address coastal adaptation at a nation-wide scale. The Government has struggled to respond to the actions identified in the CIM Plans in a co-ordinated and comprehensive manner. In part this is due to the cross sectoral nature of a number of the actions identified but also due to the shortage of financial resources. Samoa has now moved on from adaptation action identification to the need for a consolidated and co-ordinated programme of actions to secure the benefits from the adaptation measures identified.

207. Without a co-ordinated implementation programme there can be serious consequences leading to economic losses and degradation of natural resources from the destruction of village and community assets, and potentially loss of life. This is the more especially so given the concentration of villages and population in the exposed and vulnerable coastal areas.

### **Additionality (Adaptation cost reasoning)**

208. The AF programme will enable the completion of a wide range of recommended community based adaptation actions previously identified in the CIM Plans prepared for all villages and districts in Samoa. The CRIP/PPCR project will be addressing 16 districts and the balance of 25 districts will be covered under the AF programme.

209. The AF funding will allow completion of climate proofing measures on coastal roads and related infrastructure in priority districts and villages. Without the AF funding these roads and the villages served by them will be exposed to higher levels of potential disruptions arising from storm events. Eventually without climate proofing adaptation measures being applied, village access could be severed requiring extensive and expensive replacement.

210. Shoreline protection measures have been identified in a large number of villages and districts to protect assets from climate induced hazards. To date the conventional responses has been almost exclusively seawalls. The AF programme will introduce a range of other measures broadening the range of practical experience in coastal protection. Two measures in particular will be implemented under the AF programme. Beach replenishment has never been applied in Samoa as an adaptation mechanism and valuable experience will be learned on this option. Riparian planting will also be undertaken in coastal margins and along stream courses.

211. Water supply adaptations will be implemented under the AF programme. This will enable communities also to secure better health outcomes and contribute positively to the overall better management of the country's water resources.

## **Component 3: Institutional strengthening to support climate resilient coastal management policy frameworks**

### **Baseline**

212. Climate resilient management frameworks have been formulated under the CIM Plans but to date lack a focussed and co-ordinated implementation strategy. MNRE has been identified as the lead technical agency to implement climate change adaptation and mitigation in Samoa. A significant number of climate change adaptations are being pursued some of which have impacts upon the coastal zones but none of which take the whole of country approach necessary to secure the measures previously identified. Within MNRE there are several divisions involved in

various climate change related adaptation initiatives but none are capturing the range of activities necessary for the integrated application envisaged in the CIM plans.

213. The Land Management Division has been undertaking coastal protection works as a direct result of the recent tsunami. These works have in some cases been undertaken in locations and to a standard which would not meet the minimum levels of protection advocated in the CIM Plans. The lack of technical capacity and appropriate skills in MNRE to avoid this would result in a potential to produce possible mal-adaptations.
214. The consistent inclusion of climate change related considerations in Government policies for land use and development as well as key infrastructure investments lacks cohesion. In part this is due to the lack of comprehension of the wide ranging significance of this and a lack of awareness of potential response options.
215. There is a lack of consistent capturing of technical knowledge regarding climate change and potential adaptation responses. In part this is due to the dispersion of climate change adaptation activities across a number of divisions within MNRE and the lack of a central repository of information and consistent programmes to ensure dissemination of this information.

#### **Additionality (Adaptation cost reasoning )**

216. Implementation of climate resilient coastal management frameworks will be strongly supported by the AF programme by means of building institutional capacity on MNRE and other Ministries to undertake implementation of climate resilient infrastructure and to co-ordinate the consideration of climate change issues at all levels of policy formulation.
217. Procurement capacity will be strengthened with new standard mechanisms to engage the private sector in the delivery of a works programme with enhanced technical review capacity in the Land Management Division of MNRE.
218. The preparation of a village hazard zone relocation manual capturing the experience from the relocation planning and implementation process will be a key piece for the training activities envisaged under the proposed programme, and for the support of the replications such processes in the future.
219. Knowledge management will be a key output of the AF programme with the systematic capture, exchange and dissemination of a wide range of climate change adaptation information gathered under the programme. A range of communication methods will be used and a variety of products developed to ensure all sectors of the community are engaged.

### **PART III: IMPLEMENTATION ARRANGEMENTS**

#### **A. Describe the arrangements for programme implementation.**

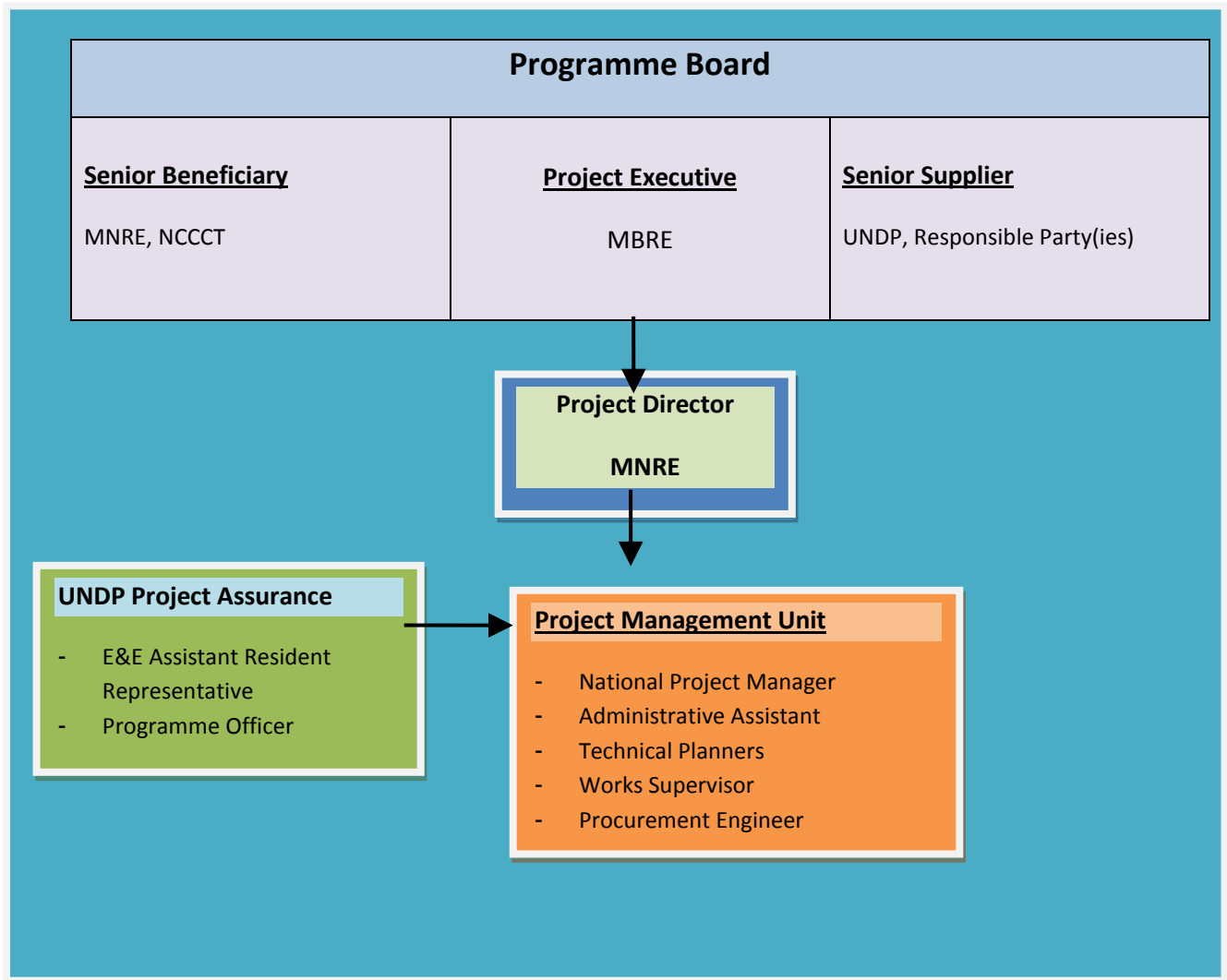
197. The Project will be implemented through UNDP's **National Execution Modality (NEX)**, with the Ministry of natural Resources and Environment (MNRE) serving as the designated national executing agency ("*Implementing Partner*") of the



project. MNRE 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. MNRE is responsible for the timely delivery of project inputs and outputs, and in this context, for the coordination of all other responsible parties, including other line ministries, local government authorities and/or UN agencies.

198. Upon the request of the Government of Samoa, UNDP will serve as the Multilateral Implementing Agency (MIE) for this project. Services that UNDP will provide to the Implementing Partner in support of achieving project Outcomes are outlined in Annex 1. UNDP's services will be provided by staff in the UNDP Multi-Country Office in Samoa, UNDP Asia Pacific Regional Centre in Bangkok (with a Regional Technical Advisor on Adaptation out-posted in Samoa) as well as UNDP Headquarters (New York).
199. A **Programme Board (PB)**, responsible to approve 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 designated senior-level representatives of MNRE, and Ministries and agencies involved in the National Climate Change Country Team. A complete list of PB members and their designated alternates will be provided in the inception report.
200. MNRE will appoint a **National Project Director (NPD)**, who will be designated over the course of the project inception phase. The costs of the NPD role will be borne by the Government of Maldives as in-kind contribution to the project.
201. **National Project Manager (NPM)**: He/she will be a dedicated professional designated for the duration of the project. The PM's prime responsibility is to ensure that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost.
202. **Project-Support**: The NPM will be supported by a core team of technical and support staff forming the **Project Implementation Unit (PIU)** located at MNRE to execute project activities, including day-to-day operations of the project, and the overall operational and financial management and reporting.
203. **Project assurance**: UNDP Samoa 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 MNRE. On the technical side, UNDP Samoa 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 Country Office in Samoa to provide financial and technical monitoring and implementation support services.
204. To deliver specific Outputs as outlined in the logical framework, MNRE can delegate such responsibilities to external partners (to be referred to as *Responsible Parties*) through direct contracting. MNRE will bear responsibility for the delivery of those Outputs and put in adequate place measures to oversee such work. Such institutions will be contracted through appropriate modalities (as advised by UNDP). The corresponding Letters of Agreement (LoA) will be annexed to the project document that will be signed between UNDP and the Government of Samoa after the AF project document has been endorsed.

The organigram of the programme is as follows:



## Programme Execution Costs

Cost Item	Year - 1	Year - 2	Year - 3	Year - 4	Total
1 National Programme Co-ordinator salary	22,500	22,500	22,500	22,500	<b>90,000</b>
1 Administrative Assistant Salary	13,500	13,500	13,500	13,500	<b>54,000</b>
1 Principal Planner PUMA Technical Unit salary	22,500	22,500	22,500	22,500	<b>90,000</b>
2 Planners PUMA Technical Unit salary	24,000	24,000	24,000	24,000	<b>96,000</b>
1 Project Procurement Engineer LMD salary	22,500	22,500	22,500	22,500	<b>90,000</b>
2 Works Supervisors LMD salary	38,000	38,000	38,000	38,000	<b>152,000</b>
Office Furniture	10,000				<b>10,000</b>
Computers/ IT equipment	10,500	1,500	1,500	1,500	<b>15,000</b>
Stationary and supplies	2,500	2,500	2,500	2,500	<b>10,000</b>
Vehicle and Travel to project field sites	23,250	5,000	5,000	5,000	<b>38,250</b>
Mid-term Evaluation		21,000			<b>21,000</b>
Final Evaluation				32,000	<b>32,000</b>
<b>TOTAL</b>	<b>189,250</b>	<b>173,000</b>	<b>152,000</b>	<b>184,000</b>	<b>698,250</b>

**B. Describe the measures for financial and programme risk management.**

205. The table below sets out the key financial and programme risks assessed for the programme. Overall, as this programme is building upon more than 10 years experience in dealing with CC induced change, there is a substantial basis of knowledge and experience to draw upon within Government regarding the management of project and programme risks.

**Project Risks and Mitigation Measures**

Risk	Level	Mitigation measures	Responsibility
As this programme is designed to be complementary to the CRIP/PPCR programme, any delay in that would impact on achieving desired “whole of country” joint project outputs and outcomes and reduce scope to deliver programme as outlined in proposal	L	Develop close coordination between the two programmes with a joint PSC.  CRIP/PPCR funding approval has been granted by the WB with the project now moving into the inception phase.	MNRE, MoF and UNDP
Extreme climatic events and geophysical hazards damage or eradicate programme results, or cause major disturbances resulting in delays due to needed emergency and recovery processes	M	Close monitoring of any developing climate events over the duration of the programme and ensuring responses are effected within the national DRM response framework.	MNRE
Poor collaboration between project partners	M	Inception workshop to clarify roles and responsibilities and establish and implement project stakeholder collaboration and team building activities	NPC
Weak cooperation by villages in proposed districts.	L	Previous CIM Plan experience would suggest low likelihood of this occurring but programme will seek and confirm community commitment during early stage of project and build ownership	MNRE and MWCS D

Land disputes amongst village members adversely affecting village relocation land use planning.	M	Use project technical team to encourage village to devise a community lead solution through consultation to secure commitment and minimize disputes	MNRE, MWCSO and Village councils
Limited human resources in Government ministries and agencies to contribute to the activities.	M	Secure participation of key Ministries and Agencies during programme inception phase and use positions to be recruited in the project to provide technical backstopping.  Project monitoring process to identify any problems at an early stage and NPC to arrange for alternative measures including use of NGOs and community members	NPC and UNDP
A series of unusually adverse climatic conditions damage adaptation measures being implemented, or weaken the interest of key stakeholders to addressing adaptation issues.	L	Schedule project activities to avoid and/or respond to such occurrences.	NPC
The techniques and technologies developed are not gender sensitive – i.e. they increase inequity between men and women or change the social roles of men and women in a way that reduces self reliance.	M	Conduct training on gender analysis for project team and use guidelines during selection of technologies	NPC and MWCSO
The government is not supportive, politically and financially, to a cross-sectoral and integrated approach to the management of climate risks and opportunities.	L	Reinforce National CCA Policy mutual obligations for project implementation at programme outset	NPC

Stakeholders are not able to perceive reductions in vulnerability over the time-scale determined by programme duration;	M	Maintain proactive outreach communications strategy for duration of programme.	NPC
Stakeholders are not able to distinguish vulnerability to climate change from baseline weaknesses in land, coastal, and water resources management	M	Maintain proactive outreach communications strategy for duration of programme	NPC

206. While the above risks need to be assessed in detail, strong commitment from the Government of Samoa exists, with well-functioning national coordination mechanisms (NCCCT) which limits the likely risks of the proposed programme. Furthermore, linkages to ongoing and planned baseline development activities implemented by government, as well as local acceptance, will minimize these risks.

207. One of the most serious risks are related to limited qualified staff and high turnover, which are common issues in a number of Pacific countries. The mitigation strategy to address this risk involves early and consistent engagement of senior government decision makers on programme progress and monitoring, the application of an awareness programme for policy makers, and the involvement of a group of core technical officers in relevant line Ministries and Agencies as well as village councils and leaders. During regular programme review meetings, in which UNDP will be an active participant, all risks and mitigation measures will be reviewed and updated as per established practices.

### C. Describe the M & E arrangements & provide a budgeted M&E plan

208. Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will be carried out by the Project team, verified by the OPM and the UNDP Country Office in Samoa. Dedicated support by the technical adaptation teams in the UNDP Asia-Pacific Regional Center and UNDP New York will be provided on a regular basis. The Results Framework of the project defines success indicators for project implementation as well as the respective means of verification. A Monitoring and Evaluation (M&E) system for the project will be established, based on these indicators and means of verification. It is important to note that the Results Framework in Section F, including its indicators, targets and means of verification, will be reconfirmed during the inception phase of the project. Any changes to the Results Framework require approval by the Project Board.

209. A **Project Inception Workshop** will be conducted within four months of project start up with the full project team, relevant government counterparts, national stakeholders, partners, and UNDP. The Inception Workshop is crucial to building ownership for project results and to plan the first year annual work plan. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, document mutual agreement for the proposed executive arrangements amongst stakeholders, and assist the project team to understand and take ownership of the project's goals and objectives. Another key objective of the Inception Workshop is to introduce the project team which will support the project during its implementation. An Inception Workshop Report will be prepared and shared with participants to formalize various

agreements decided during the meeting.

210. A UNDP **risk log** will be regularly updated in intervals of no less than every six months in which critical risks to the project have been identified. **Quarterly Progress Reports** will be prepared by the Project team and verified by the Project Board. **Annual Project Reports** will be prepared to monitor progress made since project start and in particular for the previous reporting period. These annual reports include, but are not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project outputs delivered per project Outcome (annual);
- Lessons learned/good practices;
- Annual expenditure reports;
- Reporting on project risk management.

211. Government authorities, members of the Project Board and UNDP staff will conduct regular field visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress.

212. In terms of financial monitoring, the project team will provide UNDP with certified periodic financial statements. Audits on the project will follow UNDP finance regulations and rules and applicable audit policies. The Audit will be conducted in accordance with UNDP Financial Regulations and Rules and applicable audit policies on UNDP projects by a legally recognized auditor of the Government, or by a commercial auditor engaged by the Government. During project implementation, Annual Work Plans (AWP's) and Quarterly Work Plans (QWP's) will be used to refine project delivery targets and realign project work upon consultation and endorsement by the Project Board.

213. The project will undergo an independent **Mid-Term Evaluation (MTE)** at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes and identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; highlight issues requiring decisions and actions; and present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for the final half of the project's term. A summative **terminal evaluation** will be conducted 3 months before project closure.

### Programme Monitoring and Evaluation Budget

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	<ul style="list-style-type: none"> <li>▪ Project Manager</li> <li>▪ UNDP CO, UNDP CCA</li> </ul>	Indicative cost: \$10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	<ul style="list-style-type: none"> <li>▪ UNDP CCA RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate</li> </ul>	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.

	responsibilities to relevant team members.		
Measurement of Means of Verification for Project Progress on <i>output and implementation</i>	<ul style="list-style-type: none"> <li>▪ Oversight by Project Manager</li> <li>▪ Project team</li> </ul>	To be determined as part of the Annual Work Plan preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RTA</li> <li>▪ UNDP EEG</li> </ul>	None	Annually
Periodic status/ progress reports	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> </ul>	None	Quarterly
Mid-term Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: \$21,000	At the mid-point of project implementation.
Final Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team,</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost : \$32,000	At least three months before the end of project implementation
Project Terminal Report	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ local consultant</li> </ul>	None	At least three months before the end of the project
Audit	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ Project manager and team</li> </ul>	Indicative cost : \$13,000	Prior to mid term and final evaluations
Visits to field sites	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ UNDP RCU (as appropriate)</li> <li>▪ Government representatives</li> </ul>	For AF supported projects, paid from IA fees and operational budget	Yearly
<b>TOTAL indicative COST</b>			
Excluding project team staff time and UNDP staff and travel expenses		US\$ 76,000	



**D. Include a results framework for the programme proposal, including milestones, targets and indicators**

	<b>Indicator</b>	<b>Baseline</b>	<b>Targets</b>	<b>Source of verification</b>	<b>Risks and Assumptions</b>
<b>Objective</b> Strengthened ability of coastal communities to make informed decisions about climate-change induced hazards and undertake concrete adaptation actions	Number of risk-exposed coastal communities protected through coastal adaptation measures based on climate-sensitive Coastal Infrastructure Management Plans (CIMP)	In the lack of systematic implementation of CIM Plans, the target villages and districts are highly exposed to climate-induced hazards	By the end of the programme 139 villages in 25 districts are protected from climate-induced risks as a result of coastal adaptation measures implemented guided by revised CIM Plans	Project progress reports  Technical reports  Mid-term and Final Evaluations	Linkages between national institutional coordination and local development processes facilitate the timely review of CIM Plans and the implementation of community-level coastal adaptation measures
<b>Outcome 1</b> Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages through gender-sensitive processes	No. of Districts covered by reviewed and updated CIM Plans with climate change risks fully integrated	The 6 CIM Plans prepared under IAMP1 have no DRM component.  The 19 CIM Plans prepared under SIAM2 require review.	By the end of year one at least 8, year two 18 and by the completion of the programme at least 25 districts will have their CIM Plans reviewed and updated with climate change risks fully integrated, through balanced involvement of man, women and youth population	Project progress reports.  Annual workplans	Political stability is maintained  Strong coordination amongst climate change stakeholders in the country  Strong community leadership, cooperation and support for project activities.
	No. of Districts with village hazard zone relocation plans competed	There are currently no village relocation plans available to guide relocation activities for households to move out from coastal hazard zones.	By the end of year one 5, year two 10 and by the completion of the programme at least 15 districts will have at least one village hazard zone relocation plan completed through balanced involvement of man, women and youth population	Project progress reports.  Annual workplans	

	No. of community representatives trained on coastal risk assessment and adaptation and numbers of individuals engaged in those sessions	Currently there has been no training for village leaders in coastal adaptation and climate risk reduction processes including village relocation planning.	By the end of the project at least 300 village representatives (including matais, women and youth groups) trained (year 1- 50, year 2- 100, year 3- 200), involving traditional leaders, women and youth group representatives	<i>Sui o le Nuu</i> training session minutes and attendance registers	
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<b>Outcome 2</b> Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages	Km of coastal roads and related infrastructure improved to withstand climate change and variability-induced stress	There has been road reconstructions and upgrading undertaken in response to past hazards, such as the 2009 tsunami, but without integrating systematically climate change related risks in the process	By the end of the programme at least 80km of coastal roads and related infrastructure is improved to withstand climate change and variability-induced stress	Project progress reports.  Annual workplans	Low staff turnover resulting in sustained capacity of government and partner institutions.  Communities are willing and committed to actively participate in the project
	Km of coastline with climate resilient shoreline and flood protection measures introduced, including vegetation planting along the coast and riparian streams and beach replenishment	There are only a few villages, where shoreline adaptation measures have been introduced through the PACC and CBDAMPIC projects, but only in a pilot fashion	By the completion of the programme climate resilient shoreline and flood protection measures are introduced in at least 140km coastline and riparian streams, including vegetation planting in at least 60 km coast and 50 km of riparian streams, and beach replenishment techniques applied in at least 2 sites and 10 Km coastline	Project progress reports.  Annual workplans	No political interference in selection of districts and village works sites
	N. of population and communities	The target villages	By the end of the programme at	Project progress	

	accessing improved water sector services and infrastructure to manage impacts on water supply induced by climate change and variability	lack robust water supply system to withstand climate-induced impacts in water supply	least 9,000 inhabitants in 15 villages have their water supply and associated infrastructure improved to manage climate-induced impacts on water supply	reports. Annual workplans	
	Perception of coastal communities on changes in climate-induced risks as a result of interventions	Baseline to be set at the beginning of the project	By the end of the project at least 80% of the coastal communities involved perceive risk reduction to climate-induced hazards	Community consultations and surveys	

<b>Outcome 3</b> Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy frameworks, processes and responses	Revised national organization and institutional structures to implement CIM Plans	There is currently no organization specifically identified to coordinate the implementation of CIM Plan recommended works at the village and district level.	A revised CIM Plan management institutional structure is set up by end of year one of the project	Project progress reports. Annual workplans	Government and NGOs provide on-going funding support to units responsible for information management and dissemination  Strong strategic leadership and management within government and NGO agencies and national institutions.
	A blueprint established and tested for Village relocation processes	There are currently no guidelines or procedures in place as to how to undertake village relocations in Samoa.	A completed and operationally tested village relocation handbook is developed by the end of the project to guide future relocation planning exercises	Village relocation handbook completed and approved by the PSC by the end of the programme.	Senior officials and technical officers have the time to commit to planning and training activities.
	Improved regulatory procedures for physical works implementation with climate change and disaster risk considerations incorporated.	Current regulatory procedures for physical works are incomplete and do not have consistent references to either climate change or disaster risk considerations.	Revised regulatory procedures for CIM Plan works is prepared by the end of year 3 of the programme	Programme progress report	Government senior officials committed to incorporating climate change considerations in annual and strategic plans and budgeting
	Number of policymakers and technical officers	Policymakers and technical officers	By the end of the programme at	Records of training events	

	<p>technical officers trained on climate risk assessment and planning processes for coastal adaptation.</p>	<p>have low to moderate levels of understanding of climate risk assessment and planning processes for coastal adaptation.</p>	<p>least 100 policymakers and technical officers exhibit improved levels of understanding of climate risk assessment and planning processes for coastal adaptation.</p>	<p>and registers of attendees.  Training notes prepared and delivered.</p>	<p>processes</p>
	<p>Number of knowledge management products and South-South exchange events carried out</p>	<p>Absence of a communication strategy and lack of information management system to support adaptation of coastal villages and districts to climate change risks.</p>	<p>By the end of the programme a communication strategy is developed and information and lessons learnt are compiled and disseminated to local, regional and international stakeholders through at least 4 different mediums</p> <p>By the end of Year 1 the project web site is operational and not fewer than 5 project communications have been published.</p> <p>By the end of Year 2 not fewer than 10 further project communications have been published</p>	<p>Web-sites  Fact sheets  Radio programmes  Television programmes  Project Technical reports  Project monitoring and evaluation reports</p>	

## E. Alignment of Project Objectives/Outcomes with Adaptation Fund Results Framework

Project Objective	Project Objective Indicator	Fund Outcome (s)	Fund Outcome Indicator (s)
Strengthened ability of coastal communities to make informed decision about climate-change induced hazards and undertake concrete adaptation actions	Number of risk-exposed coastal communities protected through coastal adaptation measures based on climate-sensitive Coastal Infrastructure Management Plans (CIMP)	<p><u>Outcome 2:</u> Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic &amp; environmental losses</p> <p><u>Outcome 3:</u> Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level</p>	<p><u>2.2 No. of people with reduced risk to extreme weather events</u></p> <p><u>3.1 Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses</u></p>
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator
Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages, through gender-sensitive processes	<p>No. of Districts covered by reviewed and updated CIM Plans with climate change risks fully integrated</p> <p>No. of Districts with village hazard zone relocation plans completed</p> <p>No. of community representatives trained on coastal risk assessment and adaptation and numbers of individuals engaged in those sessions</p>	<u>Output 3:</u> Targeted population groups participating in adaptation and risk reduction awareness activities	<u>3.1.1 No. and type of risk reduction actions or strategies introduced at local level</u>
Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages	<p>Km of coastal roads and related infrastructure improved to withstand climate change and variability-induced stress</p> <p>Km of coastline with climate resilient shoreline and flood protection measures</p>	<u>Output 4:</u> 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)


	<p>introduced</p> <p>N. of population and communities accessing improved water sector services and infrastructure to manage impacts on water supply induced by climate change and variability</p> <p>Perception of coastal communities on changes in climate-induced risks as a result of interventions</p>		
<p>Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy frameworks, processes and responses</p>	<p>Revised national organization and institutional structures to implement CIM Plans</p> <p>A blueprint established and tested for Village relocation processes</p> <p>Improved regulatory procedures for physical works implementation with climate change and disaster risk considerations incorporated.</p> <p>Number of policymakers and technical officers trained on climate risk assessment and planning processes for coastal adaptation.</p> <p>Number of knowledge management products and South-South exchange events carried out</p>	<p><u>Output 7:</u> Improved integration of climate-resilience strategies into country development plans</p>	<p>7.1. No., type, and sector of policies introduced or adjusted to address climate change risks</p>

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

**A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT<sup>3</sup>** *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 annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Mr. Aiono Mose Pouvi Chief Executive Officer Ministry of Foreign Affairs and Trade	Date: 11 July, 2011
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**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 and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme..	
 Yannick Glemarec Director, Environmental Finance, UNDP	
Date: October 10, 2011	Tel. and email: +1-212-906-6843; <a href="mailto:yannick.glemarec@undp.org">yannick.glemarec@undp.org</a>
Project Contact Person: Gabor Vereczi (LECRDS)	
Tel. and Email: +685 7280081; <a href="mailto:gabor.vereczi@undp.org">gabor.vereczi@undp.org</a>	

i. <sup>6</sup> 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.





## Annexes:

### ANNEX 1: UNDP Environmental Finance – Specialized Technical Services

The implementing entity fee will be utilized by UNDP to cover its indirect costs in the provision of general management support and specialized technical support services. The table below provides an indicative breakdown of the estimated costs of providing these services. If the national entity carrying out the project requests additional Implementation Support Services (ISS), an additional fee will apply in accordance with UNDP fee policy regarding ISS and would be charged directly to the project budget.

Category	Indicative Services <sup>4</sup> Provided by UNDP	Estimated Cost of Providing Services <sup>5</sup>
<b>Identification, Sourcing and Screening of Ideas</b>	<p>Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF).</p> <p>Engage in upstream policy dialogue related to a potential application to the AF.</p> <p>Verify soundness and potential eligibility of identified idea for AF.</p>	<b>US\$ 34,250</b>
<b>Feasibility Assessment / Due Diligence Review</b>	<p>Provide up-front guidance on converting general idea into a feasible project/programme.</p> <p>Source technical expertise in line with the scope of the project/programme.</p> <p>Verify technical reports and project conceptualization.</p> <p>Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements.</p> <p>Determination of execution modality and local capacity assessment of the national executing entity.</p> <p>Assist in identifying technical partners.</p> <p>Validate partner technical abilities.</p> <p>Obtain clearances from AF.</p>	<b>US\$102,750</b>
<b>Development &amp; Preparation</b>	<p>Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme.</p> <p>Source technical expertise in line with the scope of</p>	<b>US\$137,000</b>

<sup>4</sup> This is an indicative list only. Actual services provided may vary and may include additional services not listed here. The level and volume of services provided varies according to need.

<sup>5</sup> The breakdown of estimated costs is indicative only.

Category	Indicative Services <sup>4</sup> Provided by UNDP	Estimated Cost of Providing Services <sup>5</sup>
	<p>the project/programme needs.</p> <p>Verify technical reports and project conceptualization.</p> <p>Verify technical soundness, quality of preparation, and match with AF expectations.</p> <p>Negotiate and obtain clearances by AF.</p> <p>Respond to information requests, arrange revisions etc.</p>	
<b>Implementation</b>	<p>Technical support in preparing TORs and verifying expertise for technical positions.</p> <p>Provide technical and operational guidance project teams.</p> <p>Verification of technical validity / match with AF expectations of inception report.</p> <p>Provide technical information as needed to facilitate implementation of the project activities.</p> <p>Provide advisory services as required.</p> <p>Provide technical support, participation as necessary during project activities.</p> <p>Provide troubleshooting support if needed.</p> <p>Provide support and oversight missions as necessary.</p> <p>Provide technical monitoring, progress monitoring, validation and quality assurance throughout.</p> <p>Allocate and monitor Annual Spending Limits based on agreed work plans.</p> <p>Receipt, allocation and reporting to the AFB of financial resources.</p> <p>Oversight and monitoring of AF funds.</p> <p>Return unspent funds to AF.</p>	<b>US\$ 307,351</b>
<b>Evaluation and Reporting</b>	<p>Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting.</p> <p>Participate in briefing / debriefing.</p> <p>Verify technical validity / match with AF expectations of all evaluation and other reports</p> <p>Undertake technical analysis, validate results, compile lessons.</p> <p>Disseminate technical findings</p>	<b>US\$ 102,750</b>
<b>Total</b>		<b>US\$ 684, 101</b>

## Annex 2 Programme Budget Summary by Outputs

Award id: 00062174

Project id: 00079525

Component 1 Community-engagement in coastal vulnerability assessment, adaptation planning and awareness

Outcome 1 - Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages

Output	Activities	Implementing entities	Cost Estimate
<ul style="list-style-type: none"> <li>1.1. CIM Plans reviewed in 25 districts with climate induced disaster risk management fully integrated, adopting a Watershed and Ridge to Reef Management approach g.</li> </ul>	<ul style="list-style-type: none"> <li>Inception workshop to review approach and develop programme</li> <li>Development of revised CIM Plan template</li> <li>Review of flood protection requirements</li> <li>Preparation of revised IAMP 1 districts CIM Plans – Group 1 – Year 1.</li> <li>Preparation of Group 2 districts CIM Plans – Year 2.</li> <li>Preparation of Group 3 districts CIM Plans – Year 3.</li> <li>Preparation of Group 4 districts CIM Plans – Year 4.</li> <li>Updated CIM Plan handbook</li> </ul>	MNRE, MWCS D, LTA	
		<b>Sub-Total</b>	<b>561,280</b>
1.2 Village hazard zone relocation plans formulated at least 15 villages in selected districts	<ul style="list-style-type: none"> <li>Development of selection criteria</li> <li>Village consultations</li> <li>Preparation of Village Hazard Zone Relocation Plans – Group 1 – 5 villages</li> <li>Preparation of Village Hazard Zone Relocation Plans – Group 2 – 5 villages</li> <li>Preparation of Village Hazard Zone Relocation Plans – Group 3 – 5 villages</li> </ul>	MNRE and MWCS D	
		<b>Sub-Total</b>	<b>216,360</b>
1.3 Training delivered to 300 village leaders in 139 villages on review of CIM Plans and relocation planning process integrating climate risks.	<ul style="list-style-type: none"> <li>Preliminary Siu o le Nuu briefing – Year 1</li> <li>Develop training materials and translate</li> <li>Siu o le Nuu Workshop Year 2.</li> <li>Siu o le Nuu Workshop Year 3.</li> <li>Siu o le Nuu Workshop Year 4.</li> </ul>	MNRE, MWCS D	
		<b>Sub-Total</b>	<b>48,000</b>
		<b>COMPONENT TOTAL</b>	<b>825,640</b>

**Component 2 . Integrated Community–Based Coastal Adaptation and Disaster Risk Management measures**

Outcome 2: Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages

<b>Output</b>	<b>Activities</b>	<b>Implementing entities</b>	<b>Cost estimate</b>
2.1 Climate proofing measures implemented on coastal roads and related infrastructure in at least 10 districts and 40 villages	<ul style="list-style-type: none"> <li>• Review of CIM Plans Project database to specify roading projects.</li> <li>• Procurement of design consultant.</li> <li>• Preparation of site-specific designs and cost estimates for selected projects.</li> <li>• Implementation Year 1 projects – 10 villages.</li> <li>• Implementation Year 2 projects – 10 villages.</li> <li>• Implementation Year 3 projects – 10 villages.</li> <li>• Implementation Year 4 projects – 10 villages.</li> <li>• Preparation of project completion report.</li> </ul>	MNRE, LTA	
		<b>Sub-Total</b>	<b>2,464,800</b>
2.2 Shoreline protection measures implemented in at least 10 districts and 40 villages.	<ul style="list-style-type: none"> <li>• Review of CIM Plans Project database to specify shoreline protection measures projects.</li> <li>• Procurement of design consultant.</li> <li>• Preparation of site-specific designs and cost estimates for selected projects.</li> <li>• Implementation Year 1 projects – 10 villages.</li> <li>• Implementation Year 2 projects – 10 villages.</li> <li>• Implementation Year 3 projects – 10 villages.</li> <li>• Implementation Year 4 projects – 10 villages.</li> <li>• Preparation of project completion report</li> </ul>	MNRE, LTA	
		<b>Sub-Total</b>	<b>2,614,540</b>
2.3 Water supply enhanced in least 5 districts and 15 villages.	<ul style="list-style-type: none"> <li>• Review of CIM Plans Project database to specify Water supply enhancement projects.</li> <li>• Procurement of design consultant.</li> <li>• Preparation of site-specific and cost estimates for selected projects.</li> <li>• Implementation Year 1 projects – 3villages.</li> <li>• Implementation Year 2 projects – 4 villages.</li> <li>• Implementation Year 3 projects – 4 villages.</li> <li>• Implementation Year 4 projects – 4</li> </ul>	MNRE, MWCSO, SWA	

	<ul style="list-style-type: none"> <li>villages.</li> <li>Preparation of project completion report</li> </ul>		
		<b>Sub-Total</b>	<b>516,420</b>
2.4 Flood protection measures are implemented in at least 5 districts and 15 villages	<ul style="list-style-type: none"> <li>Review of CIM Plans Project database to identify candidate flood protection measures projects.</li> <li>Procurement of design consultant.</li> <li>Preparation of preliminary designs and cost estimates for selected projects.</li> <li>Implementation Year 1 projects –3 villages.</li> <li>Implementation Year 2 projects –4 villages.</li> <li>Implementation Year 3 projects –4 villages.</li> <li>Implementation Year 4 projects –4 villages.</li> <li>Preparation of project completion report</li> </ul>	MNRE, LTA, MWCS D	
		<b>Sub-Total</b>	<b>428,600</b>
		<b>COMPONENT TOTAL</b>	<b>6,024,360</b>

### Component 3 Institutional strengthening to support climate resilient coastal management policy frameworks

Outcome 3 : Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy frameworks, processes and responses.

Output	Activities	Implementing entities	Cost estimate
3.1. Revised national organisation and institutional structures for CIM Plans implementation.	<ul style="list-style-type: none"> <li>Review current organisations and structures.</li> <li>Develop revised arrangements and suggested method of implementation.</li> <li>Prepare MOU's for agreement between key partners.</li> </ul>	MNRE	
		<b>Sub-Total</b>	<b>52,640</b>
3.2 Village relocation handbook	<ul style="list-style-type: none"> <li>Preparation of draft Village Relocation Handbook.</li> <li>Consultation with key stakeholders</li> </ul>	MNRE, MWCS D	

prepared to guide further relocation planning activities.	<ul style="list-style-type: none"> <li>and Sui o le Nuu briefings.</li> <li>Finalised Village Hazard Zone Relocation Handbook</li> </ul>		
		<b>Sub-Total</b>	<b>158,300</b>
3.3 Regulatory procedures for physical works implementation revised with climate change risks integrated.	<ul style="list-style-type: none"> <li>Review of contracts and procurement procedures.</li> <li>Preparation of revised procurement manual and design guidelines for adaptation works incorporating CCA and DRM components.</li> </ul>	MNRE, LTA.	
		<b>Sub-Total</b>	<b>56,270</b>
3.4 Policymakers and technical officers in the relevant Ministries and Authorities are trained on climate risk assessment and planning processes for coastal adaptation.	<ul style="list-style-type: none"> <li>Conduct introductory workshop and training needs analysis.</li> <li>Develop training plan and materials.</li> <li>Training Workshops – Year 1.</li> <li>Training Workshops – Year 2.</li> <li>Training Workshops – Year 3.</li> <li>Training Workshops – Year 4.</li> <li>Prepare Training Summary Report</li> </ul>	MNRE, MWCSO, MoF, LTA, MWTI	
		<b>Sub-Total</b>	<b>112,425</b>
3.5 Adaptation lessons learned and best practices generated through the adaptation implementation and related policy processes are captured and disseminated nationally and globally through appropriate mechanisms	<ul style="list-style-type: none"> <li>Develop programme communications strategy and plan.</li> <li>Prepare and operationalize web site material.</li> <li>Prepare and publish programme communications.</li> <li>Prepare material for Environment Week – Year 1.</li> <li>Prepare material for Environment Week – Year 2.</li> <li>Prepare material for Environment Week – Year 3.</li> <li>Prepare material for Environment Week – Year 4.</li> </ul>	MNRE	
		<b>Sub-Total</b>	<b>120,365</b>
		<b>COMPONENT TOTAL</b>	<b>500,000</b>

## Annex 4 Total Programme Budget and Work Plan

Award id: 00062174

Project id: 00079525

GEF Outcome/Atlas Activity	Implementation	Fund ID	Donor Name	Atlas Budgetary Code	ATLAS Budget Description	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year3	Amount (USD) Year 4	Total (USD)	
<b>OUTCOME1:</b>	UNDP - NEX	62040	AF	71300	Local Consultants	85500	75600	34065	24000	<b>219165</b>	
Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages	UNDP - NEX	62040	AF	72100	Contractual Services-Companies	82560	62560	52560	22570	<b>220250</b>	
	UNDP - NEX	62040	AF	71600	Travel	22250	22250	18250	18275	<b>81025</b>	
	UNDP - NEX	62040	AF	74200	Promotion Materials	61925	61925	61925	61925	<b>247700</b>	
	UNDP - NEX	62040	AF	72400	Communication Equipment	35000	22500			<b>57500</b>	
	<b>Total Outcome 1</b>						<b>287235</b>	<b>244835</b>	<b>166800</b>	<b>126770</b>	<b>825640</b>
	UNDP - NEX	62040	AF	71200	Int'nal Consultants	80200	210210	190,000	101,218	<b>581628</b>	

<b>OUTCOME 2: Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages</b>	UNDP - NEX	62040	AF	71300	Local Consultants	78390	150000	140,000	100,500	<b>468890</b>	
	UNDP - NEX	62040	AF	71600	Travel	27554	47554	47,554	27,556	<b>150218</b>	
	UNDP - NEX	62040	AF	72300	Materials and supplies	80609	485600	445423	110600	<b>1122232</b>	
	UNDP - NEX	62040	AF	72600	Grants	110000	280000	270000	150000	<b>810000</b>	
	UNDP - NEX	62040	AF	72100	Contractual Services-Companies	363300	1137688	952654	437750	<b>2891392</b>	
	<b>Total Outcome 2</b>						<b>740053</b>	<b>2311052</b>	<b>2045631</b>	<b>927624</b>	<b>6024360</b>
	UNDP - NEX	62040	AF	71300	Local Consultants	15000	30,000	30000	25000	<b>100000</b>	
	UNDP - NEX	62040	AF	71200	International Consultants	14750	22750	20750	16750	<b>75000</b>	
	<b>OUTCOME 3: Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy frameworks, processes and responses</b>	UNDP - NEX	62040	AF	71600	Travel	18750	18750	18750	18750	<b>75000</b>
UNDP - NEX		62040	AF	74200	Promotional Materials	10000	30000	35000	25000	<b>100000</b>	
UNDP - NEX		62040	AF	72100	Contractual Services-Companies	37500	42500	42500	27500	<b>150000</b>	
<b>Total Outcome 3</b>						<b>96000</b>	<b>144000</b>	<b>147000</b>	<b>113000</b>	<b>500000</b>	
UNDP - NEX		62040	AF	71400	Contract Ser-Individ	143000	143000	143000	143000	<b>572000</b>	
UNDP - NEX		62040	AF	72200	Office Furniture	10000				<b>10000</b>	
<b>Project Management</b>		UNDP - NEX	62040	AF	72800	IT Equipment	10500	1500	1500	1500	<b>15000</b>
	UNDP - NEX	62040	AF	72500	Stationary & Supplies	2500	2500	2500	2500	<b>10000</b>	
	UNDP - NEX	62040	AF	71600	Vehicles & Travel	23250	5000	5000	5000	<b>38250</b>	



UNDP - NEX	62040	AF	71200	Int'nal Consultants		15000		25000	<b>40000</b>
UNDP - NEX	62040	AF	71300	Local Consultants		6000		7000	<b>13000</b>
<b>Total Project Management</b>					<b>189250</b>	<b>173000</b>	<b>152000</b>	<b>184000</b>	<b>698250</b>
<b>GRAND TOTAL</b>					<b>1312538</b>	<b>2872887</b>	<b>2511431</b>	<b>1351394</b>	<b>8048250</b>

### Budget notes

Note	Atlas Number	ATLAS Budget Description	4 year Total (USD)	Description of expenditures
<b>OUTCOME1: Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages</b>				
<b>Total: 825,640 USD</b>				
	71300	Local Consultants	219,165	Community consultation, Socio-Economist and environmental planning specialists and 2 Senior technical officers to support CIM Plan revision, preparation of Village Relocation Plans, and related training activities.
	72100	Contractual Services-Companies	220,250	coastal management specialists, trainer and adviser for 3D participatory modelling, including consultations, data management and materials for 25 districts
	71600	Travel	81,025	Travel costs for community consultations, Inception workshop and Annual workshops
	74200	Promotion Materials	247,700	Training materials and workshop documents in the 25 districts
	72400	Communication Equipment	57,500	Audiovisual equipment and printed collaterals for stakeholders
<b>OUTCOME 2: Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages</b>				
<b>Total: 6,024,360</b>				
	71200	Int'nal Consultants	581,628	Technical assessments for drainage systems, water supply enhancement, beach replenishment and other coastal protection measures, climate proofed coastal infrastructures, flood protection interventions
	71300	Local Consultants	468,890	Communications specialist, GIS specialist, Civil Engineer technical adviser, Contract manager for the implementation of the CIM plans, Coastal management specialist EIA for the CIM plans interventions

71600	Travel	150,218	Travel costs for consultants Study tours for knowledge and experience exchange in other SIDS Participation in international conferences, workshops and trainings on coastal management
72300	Materials and supplies	1,122,232	Materials for road construction, shoreline protection, water supply systems and flood protection structures.
72600	Grants	810,000	Small grants for community-based projects, administered by MNRE
72100	Contractual Services- Companies	2,891,392	Contract services for the design and construction of coastal roads. Contract services for the design and enhancement of water supply systems Contract services for the design and development of shoreline protection measures Contract services for the design and development of flood protection measures

**OUTCOME 3: Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy**  
**Total: 500,000 USD**

71300	Local Consultants	100,000	Institutional and policy advisor
71200	International Consultants	75,000	CCA and DRR Advisor
71600	Travel	75,000	Travel costs for consultants
74200	Promotional Materials	100,000	Support materials for the policy review and training processes, knowledge management products (publications, policy briefs, guidelines, etc.)
72100	Contractual Services- Companies	150,000	Knowledge management and communications specialists and related materials for KM products, including videos, brochures, case studies, photo-stories and brochures, etc., with electronic, printed and web-based dissemination to stakeholders Training and adviser support and materials for the introduction of community-based ecosystem-monitoring and education programmes (such as the Sandwatch)

**Project Management**  
**Total: 698,250 USD**























	Contract Ser-Individ	572,000	Project staff: National Programme Co-ordinator, Administrative Assistant, Principal Planner PUMA Technical Unit, Planners PUMA Technical Unit salary, Project Procurement Engineer LMD salary, Works Supervisors LMD salary
71400			
72200	Office Furniture	10,000	PMU office furniture
72800	IT Equipment	15,000	IT equipment for PMU office
72500	Stationary & Supplies	10,000	Stationary for PMU office
71600	Vehicles & Travel	38,250	Transport for Project Management Unit
71200	Int'nal Consultants	40,000	Mid-Term and Final Evaluation
71300	Local Consultants	13,000	Mid-Term and Final Evaluation

## Annex 5 Programme Implementation Schedule / Gantt Chart

Award id: 00062174, Project id: 00079525

Implementation schedule: 

**Milestones:** 

Particulars	Schedule															
	Year1				Year2				Year3				Year4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>PROGRAMME INCEPTION</b>																
Programme Definition Workshop																
Programme Inception Workshop Report																
<b>OUTCOME 1: Strengthened awareness and ownership of coastal adaptation and climate risk reduction processes at community and national levels in 25 Districts and 139 villages</b>																
<b>OUTPUT 1.1 CIM Plans reviewed in 25 districts with climate induced disaster risk management elements fully integrated, adopting a Watershed and Ridge to Reef Management approach.</b>																
1.1.1 Workshop to review CIM Plans for all 25 districts																
1.1.2 Development of programme by Districts																
1.1.3 Implementation of Group 1 reviews – IAMP1 - 6 districts																
1.1.4 Implementation of Group 2 reviews – 6 districts																
1.1.5 Implementation of Group 3 reviews – 6 districts																
1.1.6 Implementation of Group 4 reviews – 7 districts																
1.1.7 Updated CIM Plan Handbook																
<b>OUTPUT 1.2 Village hazard zone relocation plans formulated at least 15 villages in selected districts</b>																
1.2.1 Prepare selection criteria for target relocation villages																
1.2.2 Apply criteria to all 139 villages and identify 20 candidate villages																
1.2.3 Consultation with MWCSD & Siu o le Nuu councils																
1.2.4 Village consultations																
1.2.5 Preparation of Village Hazard Zone Relocation Plans – Group 1 – 5 villages																
1.2.6 Preparation of Village Hazard Zone Relocation Plans – Group 2 – 5 villages																
1.2.7 Preparation of Village Hazard Zone Relocation Plans – Group 3 – 5 villages																
<b>OUTPUT 1.3 Training delivered to 300 village leaders in 139 villages on review of CIM Plans and relocation planning process integrating climate risks</b>																
1.3.1 Preliminary Siu o le Nuu briefing – Year 1																
1.3.2 Develop training materials and translate																
1.3.3 Siu o le Nuu Workshop Year 2.																
1.3.4 Siu o le Nuu Workshop Year 3.																
1.3.5 Siu o le Nuu Workshop Year 4.																
<b>OUTCOME 2: Increased adaptive capacity of coastal communities to adapt to coastal hazards and risks induced by climate change in 25 Districts and 139 villages</b>																
<b>OUTPUT 2.1 Climate proofing measures implemented on coastal roads and related infrastructure in at least 10 districts and 40 villages</b>																
2.1.1 Review of CIM Plans Project database to																

specify roading projects				
2.1.2 Procurement of design consultant.				
2.1.3 Preparation of site-specific designs and cost estimates for selected projects.				
2.1.4 Implementation Year 1 projects – 10 villages.				
2.1.5 Implementation Year 2 projects – 10 villages.				
2.1.6 Implementation Year 3 projects – 10 villages.				
2.1.7 Implementation Year 4 projects – 10 villages.				
2.1.8 Preparation of project completion report				
<b>OUTPUT 2.2</b> Shoreline protection measures implemented in at least 10 districts and 40 villages.				
2.2.1 Review of CIM Plans Project database to specify shoreline protection projects				
2.2.2 Procurement of design consultant				
2.2.3 Preparation of site-specific designs and cost estimates for selected projects				
2.2.4 Implementation Year 1 projects – 10 villages.				
2.2.5 Implementation Year 2 projects – 10 villages.				
2.2.6 Implementation Year 3 projects – 10 villages.				
2.2.7 Implementation Year 4 projects – 10 villages				
2.2.8 Preparation of project completion report				
<b>OUTPUT 2.3</b> Water supply enhanced in least 5 districts and 15 villages.				
2.3.1 Review of CIM Plans Project database to specify water supply enhancement projects				
2.3.2 Procurement of design consultant				
2.3.3 Preparation of site-specific designs and cost estimates for selected projects				
2.3.4 Implementation Year 1 projects – 3 villages.				
2.3.5 Implementation Year 2 projects – 4 villages.				
2.3.6 Implementation Year 3 projects – 4 villages.				
2.2.7 Implementation Year 4 projects – 4 villages				
2.2.8 Preparation of project completion report				
<b>OUTPUT 2.4</b> Flood protection measures are implemented in at least 5 districts and 15 villages				
2.4.1 Review of CIM Plans Project database to specify flood protection projects				
2.4.2 Procurement of design consultant				
2.2.3 Preparation of site-specific designs and cost estimates for selected projects				
2.2.4 Implementation Year 1 projects – 3 villages.				
2.2.5 Implementation Year 2 projects – 4 villages.				
2.2.6 Implementation Year 3 projects – 4 villages.				
2.2.7 Implementation Year 4 projects – 4 villages				
2.2.8 Preparation of project completion report				
<b>OUTCOME 3: Strengthened institutional capacity of government sectors to integrate climate and disaster risk and resilience into coastal management-related policy frameworks, processes and responses.</b>				
<b>OUTPUT 3.1</b> Revised national organisation and institutional structures for CIM Plans implementation				
3.1.1 Review current organisations and structures.				
3.1.2 Develop revised arrangements and suggested method of implementation				
3.1.3 Prepare MOU's for agreement between key partners				

<b>OUTPUT 3.2</b> Village relocation handbook prepared to guide further relocation planning activities.				
3.2.1 Preparation of draft Village Relocation Handbook.				
3.2.2 Consultation with key stakeholders and Sui o le Nuu briefings				
3.2.3 Finalised Village Hazard Zone Relocation Handbook				
<b>OUTPUT 3.3</b> Regulatory procedures for physical works implementation revised with climate change and disaster risks integrated.				
3.3.1 Review of contracts and procurement procedures				
3.3.2 Preparation of revised procurement manual and design guidelines for adaptation works incorporating CCA and DRM components				
<b>OUTPUT 3.4</b> Policymakers and technical officers in the relevant Ministries and Authorities are trained on climate risk assessment and planning processes for coastal adaptation.				
3.4.1 Conduct introductory workshop and training needs analysis.				
3.4.2 Develop training plan and materials.				
3.4.3 Training Workshops – Year 2.				
3.4.4 Training Workshops – Year 3.				
3.4.5 Training Workshops – Year 4.				
3.4.6 Prepare Training Summary Report				
<b>OUTPUT 3.5</b> Adaptation lessons learned and best practices generated through the adaptation implementation and related policy processes are captured and disseminated nationally and globally through appropriate mechanisms				
3.5.1 Develop programme communications strategy and plan.				
3.5.2 Prepare and operationalize web site material				
3.5.3 Prepare and publish programme communications				
3.5.4 Prepare material for Environment Week – Year 1.				
3.5.5 Prepare material for Environment Week – Year 2.				
3.5.6 Prepare material for Environment Week – Year 3.				
3.5.7 Prepare material for Environment Week – Year 4				
<b>PROJECT EXECUTION</b>				
<b>4.1 Programme t Management Unit established and operational</b>				
4.1.1 Programme staff recruited				
4.1.2 Office furniture, equipment and stationary procured				
4.1.3 PMU operational and supporting project implementation				
PMU fully staffed and operational	▲			
<b>4.2 Project monitoring and evaluation</b>				
Inception report	▲			
Quarterly reports				
Six monthly technical monitoring				
Annual Audits				
Mid Term Evaluation			▲	
Final Programme Evaluation				▲
Programme Completion Report				▲

## Annex 6 – CIM Plans - Summary of recommended works and adaptation measures

The CIM Plans were designed as a “whole of community” response to identified community risks from coastal hazards (Coastal erosion, coastal flooding, coastal landslips and potential cyclone induced inundation.) The responses were developed in consultation with the villages concerned to respond to the local issues identified during consultations. Responses were to be implemented by a mix of village and Government resources under a principle of “partnership” which was reflected in the joint signing of the CIM Plan by all village representatives, the CEO on MNRE and the Minister of MNRE.

The overall objective of the CIM Plans were to increase community resilience to a range of identified hazards in the coastal zone, including climate-induced hazards. The principle of resilience, effectively defined as the ability of the community to prepare for, respond and recover in case of an adverse event, was the foundation of the CIM Strategy adopted as Government policy in respect of managing resources in the coastal zone. This programme proposal is focusing on enhancing the preparedness of communities by reducing the proportion of community assets exposed to elevated levels of risk and hazard.

CIM Plans integrate both climate-induced and geo-physical hazards and CIM Plan recommended actions are a package of improvements designed to allow communities to better respond to the challenges they are facing in their local environment in an integrated way. Climate change induced effects have been taken into full account in the formulation of CIM Plans, including the predicted inundation from cyclones, sea level rises, precipitation change and related flooding projections. Data was sourced from the NAPA report (2005) inter alia the Climate Risk Profiles prepared in 2007. The projected increase in severity and frequency of cyclones and associated hazards will mean that the need for villages to be able to respond is all the much greater.

The sections below contain a review of the CIM Plan recommended responses describing what was envisaged to occur and how these relate to increased resilience to climate-change impacts. Some of the recommended actions involve structural works e.g. improvements to village access road to facilitate relocation of households from within hazard zones, (termed “hard” responses in the CIM Plan reports), whilst others are non-structural e.g. development of a village relocation plan to facilitate the orderly removal of households and facilities away from hazard zones (These have been termed “soft” responses in the CIM Plan reports)

### ***CIM Plans***

Coastal Infrastructure Management Plans (CIM Plans) have been prepared under Component C4.01 of SIAM-2 for all the districts in Samoa. These plans comprise the following two volumes:

- **Plan Development.** A volume of background material including a description of the District’s environment, which describes the process undertaken in preparing the CIM Plan in conjunction with representatives of the Communities involved and the Government and other stakeholders with interests in the Plan area.
- **Implementation Guidelines.** A volume that describes the Plans and Actions recommended as outcomes of the process, together with the partner responsible for implementing these outcomes. The Implementation Guidelines acknowledge the

participants of the CIM Plan preparation process and each volume is jointly signed by Village representatives and the Minister of Natural Resources and Environment (or the equivalent at the time the CIM Plan was prepared).

The CIM Plans were prepared using a standard methodology which was set out in the CIM Plan Handbook. Included in this methodology was an Economic Evaluation of the projects and works proposed for inclusion in the CIM Plan. This evaluation undertook a Cost-Benefit evaluation which broadly compared the costs of the works with the value of the community assets protected or improved. Only those projects with a Cost/Benefit ratio of greater than 1.0 were included as recommended projects.

As noted above there were two main types of works – large or district works which focused upon national or district significant infrastructure. Often this was either roading infrastructure or features associated with roads and the utility services often located within the road corridor. Generally the responsibility for these types of works would rest with either a Government ministry or authority – for example LTA are responsible for all road assets including structures such as seawalls or retaining walls or drainage which is essential to protect the main road.

The other main category of works was small or village projects. A major outcome of the consolidated CIM Plans for the whole of Samoa was a list of approximately 1720 village works items. All of these projects or works were designed to increase the resilience of the village. The main distinguishing feature of the village projects is that they are designed to serve a limited number of households as opposed to the district works which will serve either the wider district(s) or could, as in the case of main roads, be of national significance.

### ***Recommended works adaptation measures by broad types***

#### **Village works**

The following descriptions of the broad types of village works proposed through the Implementation Guidelines in the CIM Plans. From the 41 separate CIM Plans a consolidated list of recommended village works has been produced.- the CIM Plan Projects database This contains some 1720 individual actions. This is also provided in electronic format (MS excel format) and can be searched or filtered by District, Village, responsible agency and project type. This database will assist the GoS to prioritise or group projects not only by type but also geographically.

Although a large number of individual village actions were identified in the CIM Plans, they can be broadly grouped into a limited number of project types. This categorisation is somewhat generic as it does not take into account variations in scale or extent of the works which may be influenced by geographic location, or local site conditions. However, for the purposes of this analysis and the future programming of the works the categorisation is considered reasonable as there will be common approaches to similar types of works regardless of where they are located or by whom they are implemented.

The broad types of village works and a brief description of example types of activities which would need to be undertaken to execute those works are as follows:

- **Engineered coastal protection** – this will involve the construction of structures in the coastal area for coastline protection such as seawalls, groynes, breakwaters and the like. It may also include beach replenishment schemes where structures may be required on the beach to retain the replaced sand. It would also cover repairs to or re-construction of

existing seawalls. Generally the scale and complexity of these works would require some professional engineering design inputs however for repeated designs, some basic standard design typologies may be developed.

- **Road upgrades** – generally these will be of two types. Either upgrading of existing local village access and circulation roads or more significantly, the upgrading and sealing of inland plantation access roads to encourage future development away from the coastline and hazard zones. This was a common recurrent theme in many CIM Plans. In some circumstances this work type may include intersection improvements between minor or village roads and the main road. Generally this work will require some specialised design and construction knowledge and capability on the part of the ministry or agency undertaking the work. Road upgrades are also assumed to include the provision of services along the road such as electricity and telephone reticulation.
- **Drainage and water course crossings** – this category refers to the installation of culverts or fords in watercourses to improve their accessibility. Generally the works will be small scale and with appropriate engineering design guidance, could be undertaken by either small local contractors or even village labour resources potentially supplemented by some hired construction plant. Larger structures including some small bridges will require professional engineering design inputs however for repeated designs, some basic standard design typologies may be developed.
- **Drainage works** – generally these works will focus upon clearing and cleaning existing drainage channels and pathways to maintain flows and prevent flooding of village areas and access roads. In most cases the work will not need professional engineering design inputs however for larger new channels or major diversions some guidance may be needed. Generally the works will be small scale and could be undertaken by either small local contractors or even village labour resources, potentially supplemented by some hired construction plant.
- **Relocation activities** – this refers to a whole range of actions designed to facilitate the relocation of village buildings and activities away from and out of coastal hazard zones. Some of the other activities listed, such as the sealing of plantation access roads and improvements to utility services such as water, power and telephones, will support this activity
- **Raising floor levels in the Coastal Flood Hazard Zone** – this refers to the need to ensure that any new development, or re-development, in the CFHZ remains above the typical flood levels experienced in this area. This will require further detailed engineering studies of potential flood levels on a village by village basis.
- **Protecting and upgrading village pools** – village freshwater bathing pools are a major feature in many villages. They serve multiple purposes including community bathing, alternative fresh water supply and are an important cultural community resource. Generally the works to maintain these are simple construction of rock and concrete enclosing walls, overflow weirs, access steps, drainage works and the like. These works are well suited to community implementation. A significant number of the small works projects implemented under both SIAM2 and the CERP projects were for village pools. Generally these works do not require detailed design but appropriate engineering design guidance, could be undertaken by either small local contractors or village labour resources potentially supplemented by some hired construction plant. Included in this category are projects that also relate to other cultural and heritage sites such as graves.
- **Sand mining and related works** – Whilst the CIM Strategy generally recommended against the continuation of sand mining from beaches and lagoons it also recognised that in certain locations limited domestic or community removal of sand for local, non-commercial, use was justified and could be appropriately managed. If beach replenishment is to occur then sand resources must be obtained, generally from other locations in the coastal marine area. These works at any scale greater than minor will



generally require careful professional evaluation by an expert in coastal processes. Under SIAM 2 a number of recommendations were made as to potential locations for further investigation for marine and lagoon based sand resources.

- **Water supply improvements** – water supplies in village areas are generally from either Samoa Water Authority mains supply or locally based independent water schemes. Some households are still dependent upon roof tanks or wells. Most recommended actions were for increased bulk storage, the extension of mains supply or the upgrading of supply pipes to ensure a higher volume or more regular supply. Most of these improvement works will need to be undertaken by either SWA for the mains supply or by independent contractors (and potentially some village resources) for the independent water supply schemes. Generally some form of engineering design advice will be required for these works. SWA have some guidance booklets for community based water schemes to follow.
- **Wastewater and solid waste disposal improvements** – wastewater disposal is generally undertaken on a single household basis in the villages. There is potential for economies of scale and better wastewater treatment outcomes for combined or communal systems. In these cases professional design advice/support will be required but the actual works to implement the project are simple enough to be either small local contractors or village labour resources potentially supplemented by some hired construction plant. Solid waste is collected throughout Samoa on a regular basis. Generally these works relate to providing alternative to either uncontrolled dumping on land or in watercourses or open incineration.
- **Replanting and riparian management** – these works may involve replanting of mangroves or other coastal species along the coast to enhance protection through to planting along river margins to prevent erosion or re-forestation of the upland catchments to reduce the speed and severity of flood events. This is an activity which greatly lends itself to community based actions and there have been a number of successful projects executed already. Other than guidance on planting and plant husbandry techniques little design input is required.
- **Projects related to Reclamations** – issues raised in relation to reclamations were generally that they should not be undertaken but if they were necessary they should be subject to a full Environmental Impact Assessment and the full process of Government and Village consenting and consultation should be complied with.
- **Disaster and Emergency Management** – many villages recognised the need for safe places during severe events and associated emergency equipment and plans. Proposed actions included preparing plans to identify where people should go, who was responsible, what they should do and where the equipment was located for use during emergencies. Projects range from building “safe” structures for shelter to providing signs showing where emergency packs are kept. Such projects can be initiated by the village under the guidance of the Disaster Management Office.
- **Site specific projects** – there were a small number of site-specific projects that have the potential to enhance local resilience such as building a new school, pre-school or Women’s Committee House. While these are projects for the future good planning taking into account the CIM Plans, natural hazards and CCA, they have the potential to provide for greater community resilience.

The distribution of the recommended village works by these broad types are set out in the table below.

### CIM Plan Recommended Village Works Summary

Types of works	Number of times recommended in Village CIM Plans (%Total actions recommended)	Comment
Engineered coastal protection	34 (2%)	Projects made up of: Maintaining existing seawalls - 12 New village seawalls – 14 Beach replenishment - 8
Road upgrades	223 (13%)	Including sealing to rural standard, electricity reticulation and road drainage works
Drainage and water course crossings	10 (0.5%)	Identified issues of access during times of high flows and also need to improve access between different parts of the villages
Drainage works	140 (8%)	Drainage issues identified often related to roads but projects that generally would not require road upgrading.
Relocation activities	281 (16.5%)	Relocation to areas beyond the coastal hazard zones facilitated by, but not including, services upgrades.
Raising floor levels in the CFHZ	180 (10.5%)	Locating activities in the CFHZ is not necessarily risky provided that appropriate precautions are taken to avoid expected flood levels. Raising floor levels provides an alternative to relocating further from the coast, services and community facilities.
Protecting and upgrading village pools	109 (6.5%)	Protected to ensure user safety and a secure secondary supply of fresh water.
Sand mining and related works	193 (11%)	Significant concern was registered at the removal of sand from the beach and lagoon. Projects may include implementing and enforcing a ban or other management of sand mining.
Water supply improvements	84 (5%)	Projects range from providing roof water tanks to upgrading reticulation and implementing new community water schemes.

Types of works	Number of times recommended in Village CIM Plans (%Total actions recommended)	Comment
Wastewater and solid waste disposal improvements	18 (1%)	Issues raised included the need for better wastewater treatment by way of septic tanks or other treatment and uncontrolled dumping of solid waste, particularly in wetlands.
Replanting and riparian management	280 (16%)	Collectively these projects relate to maintaining and improving biodiversity as well as providing a soft option for beach protection.
Reclamations	61 (3.5%)	Issues raised related to the lack of assessment and control of new reclamations.
Disaster and Emergency Management	84 (5%)	The focus of the recommended solutions was on providing safe shelters for community use, for example in schools, churches or other community facilities.
Tourism	6 (0.5%)	Issues related to integrated environmental management.
Site-specific Projects	17 (1%)	
<b>TOTAL</b>	<b>1720 (100%)</b>	

### District works

The district works have similarly been grouped into broad categories by type of works. There are almost 400 district works items identified across all 41 districts in the CIM Plan Implementation Guidelines. In summary these works are:

- Undergrounding of utility services** – this will involve the undergrounding of power and telephone lines to improve resilience. Together these two items provided for almost 50% of the recommended District actions and was clearly a major focus of concern to the respective communities, We would expect these works to be undertaken by the two utility companies and it may be necessary for there to be a programme of financial support for this to occur without excessive costs to consumers. At the time of the CIM Plan formulation in 2004-2006 the mobile telephone network coverage was quite limited and requests for extended coverage was a common feature in many villages. We suspect from discussions with MNRE staff and others that this situation has now been substantially rectified more particularly so since the introduction of a second provider into the market.

- **Seawalls** – this was the second most commonly identified activity involving the construction of structures in the coastal area for coastline protection such as seawalls, groynes, breakwaters and the like. It would also cover repairs to or re-construction of existing seawalls. Generally the scale and complexity of these works would require some professional engineering design inputs however for repeated designs, some basic standard design typologies may be developed.
- **Road upgrades** - this was works to upgrade road condition including widening, sealing, provision of footpaths and the like. There were also some road re-location projects identified where it was recommended the road be moved away from the coastal hazard zones – in particular as an alternative to providing protection from coastal erosion. Upgrading of drainage along roads was also a category of works identified.
- **Upgraded water supplies** – these works generally related to requests to improve the quantity of water supplied and for larger pipes to improve the reliability of supply. In some cases the previous practices of surface laid pipelines was consider to be a risk to supply continuity and undergrounding was requested to improve pipeline protection.
- **Bridges, fords and culverts** – these were projects generally to improve access. In some cases fords were suggested as candidates for replacement with bridges or culverts. In some locations culverts were identified as undersized for the flows leading to flooding which affected road conditions.
- **Wastewater upgrades** – these were projects designed to improve the collection and disposal of wastewater generally in more densely populated locations where individual household systems were considered not to be coping with flows.
- **Environmental enhancement projects** – these were quite wide ranging from improvements to drainage and water flows to wetland to roadside and coastal amenity and protection planting.
- **Improved health care facilities** – this was requests for improved or new health clinics primarily in more remote areas.
- **Improved television coverage** – this was a request for upgraded coverage again focussed in the more remote Districts. Access to TV was seen as an important means of the Government being able to communicate with the community. The only relationship this has to improving resilience is the use for the dissemination of community information both generally about CCA issues and more particularly during the warning phases of emergency events
- **Site specific projects** – this included requests for the relocation of some existing Government facilities out of the coastal hazard zones.

The distribution of the recommended district works by these broad types are set out in the table below.

**Table CIM Plan Recommended District Works Summary**

Types of works	Number of times recommended (%Total)	Comments
Underground telephone services and improved mobile coverage.	124 (32%)	Responsibility of the telecom providers
Underground electricity	100 (26%)	EPC's responsibility. Investigate the potential for co-ordinated provision with roadworks upgrades.

Types of works	Number of times recommended (%Total)	Comments
Maintenance of existing seawalls and limited new seawalls	40 (11%)	These included 19 new seawalls of which 9 had suggested lengths and estimated costs provided. There were 21 instances of seawall maintenance being recommended.
Road upgrades	38 (10%)	This included the provision of footpaths and some instances of relocation of main roads inland..
Upgrade and relocate the water distribution network	18 (5%)	.
Bridges, fords and culverts	17 (4%)	These works are most likely to be associated with the road upgrades.
Improved health facilities	16 (4%)	
Improved road drainages	11 (3%)	These works are most likely to be associated with the road upgrades.
Site specific projects.	9 (2%)	This included the relocation of some existing Government facilities outside hazard zones.
Improved TV coverage	7 (1%)	Outside CIM Plan works framework
Environmental enhancement projects	7 (1%)	
Wastewater upgrade projects	5 (1%)	
<b>TOTAL</b>	<b>392 (100%)</b>	





## **Introduction to the CIM Plan**

### **The Strategic Vision**

The District Coastal Infrastructure Management (CIM) Plan for Si'umu District has been prepared as part of the Government of Samoa's Second Infrastructure Asset Management Programme (SIAM-2). The CIM Plan is one of the primary means of implementing the CIM Strategy, which was formally approved by the Government of Samoa in February, 2001, as providing the Strategic direction for the management of public and private infrastructure within the coastal area, taking into account both the natural environment and local land and resource use.

The Strategy has as its central vision "Resilience – Coastal Infrastructure and Communities Resilient to Natural Hazards". The CIM Plan takes this vision and provides the practical tools with which the communities and the government, in partnership, can implement the Strategy.

*To be resilient is to be adaptive, responsive and quick to recover so that communities are environmentally, socially and economically sustainable.*

*(CIM Strategy, January 2001).*

### **The Aim of the CIM Plan**

The Aim of the CIM Plan is to help communities and government improve resilience by identifying actions and solutions. Not all the solutions may be actioned immediately but the plan will ensure that issues and options are identified for the long-term improvement in resilience of both infrastructure and communities.

The CIM Plan will:

1. Improve the community's awareness of coastal hazard risks;
2. Enable the community and infrastructure providers to reduce coastal hazard risks in villages;
3. Enable the community and infrastructure providers to better adapt, respond and recover from cyclones.

### **Structure of the Plan**

The CIM Plan consists of two parts each serving a separate and distinct purpose.

- *Plan Development*, which describes the process undertaken in preparing the CIM Plan in conjunction with representatives of the Communities involved, the Government and other stakeholders with interests in the Plan area.
- *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 CIM Plan preparation process are acknowledged in the *Implementation Guidelines*.

## **Implementation Guidelines**

### **Purpose of the Implementation Guidelines**

The Implementation Guidelines describe the solutions proposed that will increase the resilience of the villages in the Plan area and the ways these solutions can be implemented. The solutions are presented for each of the infrastructure items that have moderate to low resilience. Where one solution will provide benefits to other items of infrastructure these "Other Benefits" are also noted. Implementation is considered to be the joint responsibility of both the villages and the government in partnership. The government is responsible for the provision of national and district "Public", infrastructure, while villages are responsible for local and community infrastructure. The responsibility for implementing the proposed actions is also defined. Solutions for both District infrastructure and Village infrastructure, and the responsibility of both partners, should be considered together as they combine to provide for the integrated management of all coastal infrastructure.

The solutions for village infrastructure will usually be the responsibility of the Village and Families in the village to implement. Advice and resources may be available from government to assist the village in implementing these solutions. In most situations these solutions will also provide benefits to both village and district infrastructure and should be considered an integral part of managing coastal infrastructure at both levels.

### **Duration of the Plan**

The CIM Plan should be reviewed at five-yearly intervals. During the Plan period, the solutions implemented will be monitored to ensure that they are effective in improving resilience. Some solutions are likely to take longer than five years to implement and the review will take the progress of these into account.

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

1. As part of the Five-yearly CIM Plan 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 determine the monitoring requirements and Key Performance Indicators.

## 2 Si'umu District Infrastructure

### CIM Plan Solutions

Infrastructure	Best Solutions and Other Solutions Proposed	Other Benefits	Implementation Guidelines
South Coast Road	<ul style="list-style-type: none"> <li>Investigate storm water drainage under and across the main South Coast Road to reduce flooding on and adjacent to the road impacting on the CFHZ and resilience of residents in the coastal hazard zones.</li> <li>Implement a regular drainage inspection programme in the District and to ensure that maintenance is undertaken regularly.</li> <li>Undertake a local education programme on the importance of maintaining drains.</li> </ul> <p>Responsibility: MWTL/Village</p>	<ul style="list-style-type: none"> <li>Improves health and safety of residents</li> <li>Reduced potential for erosion</li> </ul>	<ul style="list-style-type: none"> <li>Identify funding/budgeting requirements and implementation programme for stormwater assessment.</li> <li>Prepare education programme for importance of stormwater drainage.</li> <li>Undertake works identified.</li> <li>Implement maintenance programme.</li> </ul>
Main electricity lines in CLHZ	<ul style="list-style-type: none"> <li>Underground main electricity lines</li> </ul> <p>Responsibility: Electric Power Corporation</p>	<ul style="list-style-type: none"> <li>Improves resilience during cyclones</li> </ul>	<ul style="list-style-type: none"> <li>Include provision for underground electricity lines where practical and feasible in future programmes.</li> </ul>
Main water supply in the CEHZ and CFHZ	<ul style="list-style-type: none"> <li>Inspect and upgrade water reticulation system to full underground standards.</li> <li>Provide higher protective walls around the Si'umu Sisifo pool.</li> </ul> <p>Responsibility: Samoa Water Authority/District/Village</p>	<ul style="list-style-type: none"> <li>Improves health</li> <li>Improves resilience and ability to respond</li> </ul>	<ul style="list-style-type: none"> <li>Include provision for improved water supply and distribution networks in future funding/budgeting programmes.</li> <li>Undertake ELA on provision of water supply and distribution networks.</li> <li>Identify improvements to pool protection and implement.</li> </ul>
Rivers, estuaries, wetlands, lagoon and reef systems.	<ul style="list-style-type: none"> <li>Village and Government management of commercial sand mining in the District.</li> <li>Identify alternative sustainable sources of sand for commercial supply.</li> <li>Government and villages to manage reclamation processes affecting inland wetlands as well as along the coast.</li> <li>Initiate appropriate village replanting programmes for coastal areas.</li> <li>Investigate potential for local beach replenishment west of Coconuts Beach Resort. Cost per 100m<sup>3</sup> sand WST1500 Estimated requirement/year 300m<sup>3</sup> Annual Cost WST4500</li> <li>Village and Government management of clearing inland catchment areas close to rivers and streams to reduce sedimentation of estuaries, wetlands and the lagoon.</li> <li>Encourage riparian planting along rivers and streams.</li> <li>Replant mangrove trees along the estuary at Si'umu Sasa'e to reduce coastal erosion and siltation of the inshore reef</li> </ul> <p>Responsibility: MNREM/Village</p>	<ul style="list-style-type: none"> <li>Improves sustainability of natural resources in the District</li> </ul>	<ul style="list-style-type: none"> <li>Identify specific sites for nearshore sustainable sand mining and beach replenishment west of Coconuts Beach Resort.</li> <li>Prepare ELAs for identified sites and works.</li> <li>Undertake consultation with affected villages</li> <li>Implement regulations requiring riparian setbacks along rivers and streams.</li> </ul>

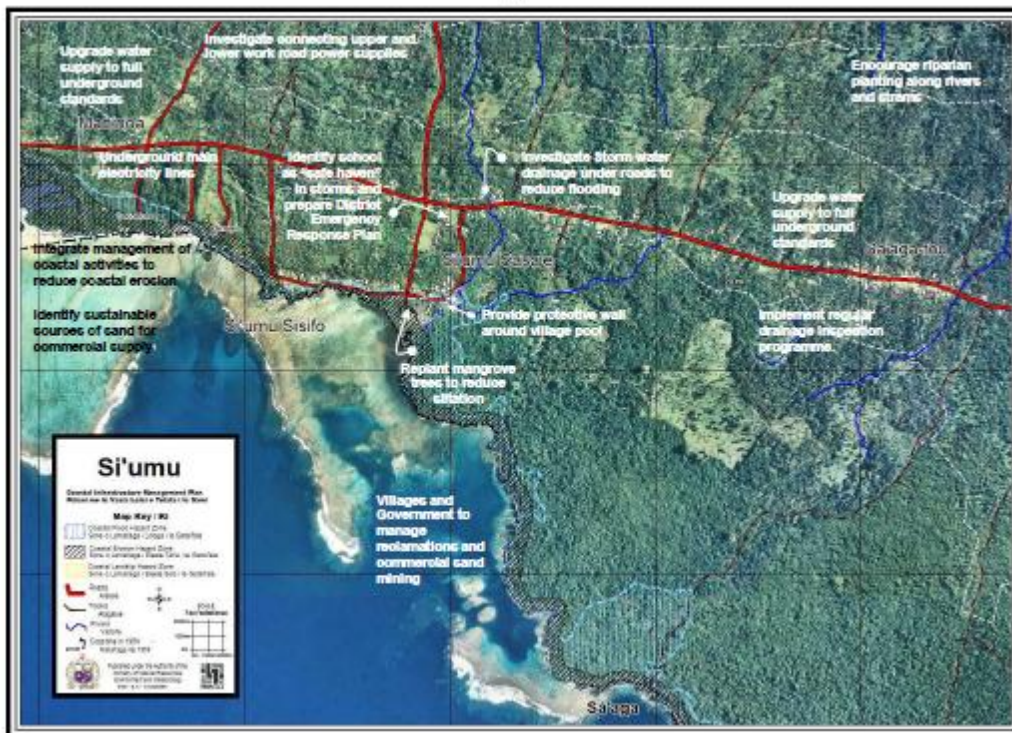
Infrastructure	Best Solutions and Other Solutions Proposed	Other Benefits	Implementation Guidelines
Si'umu Sisifo Primary School	<ul style="list-style-type: none"> <li>Identify school as a safe haven.</li> <li>Prepare a District Emergency Response Plan identifying resources needed for the school as a safe haven.</li> <li>Prepare signs in English and Samoan to be erected at the tourist resorts identifying actions in the event of emergencies including a location map of nearest emergency facilities.</li> <li>Prepare a stormwater management plan for the school as a safe haven, to avoid flooding from the South Coast road.</li> </ul> <p>Responsibility: MNREM/District/Village</p>	<ul style="list-style-type: none"> <li>Improves preparedness of District for cyclones.</li> <li>Improves resilience and ability to respond</li> </ul>	<ul style="list-style-type: none"> <li>District response plan should include procedure for who prepares, maintains and opens the safe haven as well as procedures to notify villagers and visitors in an emergency and to maintain and replenish supplies.</li> <li>Identify location of facilities on CIM Plan maps.</li> </ul>
Tourist Resorts	<ul style="list-style-type: none"> <li>Integrated management of coastal activities such as tourist resorts with adjacent areas to avoid erosion resulting from disruption to the coastal sediment flow.</li> </ul> <p>Responsibility: MWTL/Commercial Operators/Village</p>	<ul style="list-style-type: none"> <li>Improves resilience of District to coastal hazards</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate consultation between MWTL, Commercial operators and Villages.</li> </ul>

Note: Refer to Maps to see proposed alignments and locations of intervention solutions.



Further Issues Raised During the CIM Plan Process

Issue	Suggested Solution and Responsibility	Comment
<p>Tourist resorts</p>	<ul style="list-style-type: none"> <li>Design and construct seawalls/ offshore barriers to protect tourist resorts.</li> </ul> <p>Cost of off-shore barrier opposite Coconuts 200m long: WST260,000 Benefit/cost ratio 0.70 Responsibility: Commercial Operators</p>	<ul style="list-style-type: none"> <li>In some areas coastal erosion can only be reduced with the construction of sea walls, but seawalls can cause increased coastal erosion in adjacent areas.</li> <li>Offshore barriers built in conjunction with the removal of existing structures that disrupt the flow of sediment along the coast is expensive and the benefits of the proposal do not exceed the costs. A local solution proposed above is to provide for the local replenishment of sand within the small area to the west of the Coconuts Beach Resort.</li> </ul>
<p>Main water supply</p>	<ul style="list-style-type: none"> <li>The provision of a safe and reliable domestic water supply for the District.</li> <li>Protect district water catchments and distribution networks</li> <li>Upgrade government rural water reticulation system</li> </ul> <p>Responsibility: Samoa Water Authority/Villages</p>	<ul style="list-style-type: none"> <li>Water is a significant issue in the district and the provision of a reliable supply of water for domestic use is necessary for the health and safety of the community. The existing water supply and distribution networks are not at risk from coastal hazards and therefore the issue lies outside the scope of this Coastal Infrastructure Management Plan.</li> </ul> <p>Possible solutions may include upgrading the existing water supply and distribution networks or the provision of roof water collection tanks to provide for domestic supply. The issue is recorded as an item for further investigation by the appropriate agencies.</p>
<p>Seawalls at Si'umu</p>	<ul style="list-style-type: none"> <li>Two seawalls were considered at Si'umu Sasa'e to protect areas of District infrastructure including:</li> </ul> <ol style="list-style-type: none"> <li>Replace existing seawall to 20 year design standard Length 90m Cost WST36,000 Benefit/cost ratio 0.36</li> <li>New seawall to 20 year design standard Length 220m Cost WST87,000 Benefit/cost ratio 0.15</li> </ol> <p>Responsibility: MVTI</p>	<ul style="list-style-type: none"> <li>In both cases the benefit to cost ratio in comparing the seawall option to the "Do Nothing" option was less than 0.8 which is the main indicator that further investigation is warranted.</li> <li>Both the "Do Minimum" (continued maintenance) and Managed Retreat (relocate assets from the hazard area) options provide a greater benefit than cost for the design life of the seawalls which is 20 years.</li> <li>The ratios assessed are considered too low for consideration as viable solutions.</li> </ul>



### 3 Maninoa Village Infrastructure

#### CIM Plan Solutions

Infrastructure	Best Solutions and Other Solutions Proposed	Other Benefits	Implementation Guidelines
Village Housing in CEHZ and CFHZ	<ul style="list-style-type: none"> <li>Village management of domestic sandmining.</li> <li>Identify a sustainable source for domestic sand in the vicinity.</li> <li>Continue to relocate outside the CEHZ and CFHZ when buildings require replacement or ensure investment within the hazard zones is considered in relation to the potential for coastal erosion.</li> <li>Continue planting coastal vegetation in coastal areas and protect young plants from damage.</li> </ul> <p>Responsibility: Village/Families</p>	<ul style="list-style-type: none"> <li>All infrastructure within CEHZ and CFHZ.</li> </ul>	<ul style="list-style-type: none"> <li>Village to share with Government control over sand mining activities.</li> <li>Village/Families to take note of Hazard maps provided and to plan investment and structures accordingly.</li> </ul>

Note: Refer to Maps to see proposed alignments and locations of intervention solutions.



Serious coastal erosion just west of Coconut





## **Annex 7 – Summary of discussions at proposal formulation meetings**

### **Initial coordination meeting between MNRE and UNDP, 28 January 2011**

#### **Meeting summary notes:**

**Project (working title):** Enhancing resilience of coastal communities of Samoa to climate change and disaster risks

#### **Timeline and key deliverables:**

- Week 31 Jan-4 Feb: initial meeting with MNRE team (LMD, PUMA, MET, DEC, WRD, Steve)
- Week 7-11 Feb: prepare a project brief and circulate to other relevant ministries and nat. stakeholders to invite to project formulation team
- End Feb-early March: inception workshop and consultations
- 15 May: first draft of full proposal
- Early-mid-June: 2<sup>nd</sup> stakeholder workshop
- 27 June: final proposal
- 4 July: submission to UNDP HQ for technical and financial clearance
- 11 July: submission to AF Sec
- August-September: responding to AF Sec review comments previous to AFB meeting in Sept (if applies there will be 10 days to respond)

#### **National stakeholders to be involved (project formulation team) – technical focal points to be designated at Principal Officer level**

- MNR: LMD, PUMA, MET, DEC, WRD, GEF Coordination (Steve)
- MWTI
- LTA
- MWCSO
- MoF
- Attorney general
- SUNGO

#### **Related initiatives (baseline)**

- SLM
- SIAM (CIM plan review)
- PACC
- SGP-CBA
- CBDAMPIC
- WB-PCCR
- CCSDP – (UNDP-supported, implemented through MWCSO – village sustainable development plans in 23 villages)
- The whole NAPA portfolio (NAPA 1-5)

#### **Technical considerations, project scope**

- Focus on coastal and riverine flood protection

- Integrated and holistic approach addressing coastal zone, reef and watershed management through district-wide and village level planning
- Upscaling current coastal adaptation work (e.g. PACC, SGB-CBA, CBDAMPIC, SIAM), which is limited to a few pilot villages as demo
- There is a broad range of experience on coastal adaptation and protection work, need to systematically analyse good and bad practices, pros and cons of different solutions, lessons learnt
- Need site specific solution to each location, based on sound assessment and technical backing
- Combination of soft and hard measures, tailored to each community in a cost effective way. Combining project and community resources (e.g. material, labour)
- Importance of quality control and M&E: some past measures have failed because solution was not appropriate to the risks or workmanship was not up to quality.
- Need to build community awareness on CC in general, taking into consideration different community groups. Provide both short-term livelihood benefits and build long-term resilience. Bring in SGP experience on community evaluations
- Importance of land availability and ownership issues for village-level adaptation planning
- Policy links: based on CIM Plans
- WB-PPCR links: PPCR coastal work will principally deal with public infrastructure in selected districts, the AF will focus on a combination of public infrastructure and community-based adaptation in remaining districts in complementary fashion

## **National Workshops 1 and 2**

**Adaptation Fund Samoa Programme Proposal:**

*Enhancing resilience of coastal communities of Samoa to climate change and disaster risks*

First National Workshop, 10.00am – 12noon Friday 25 March 2011.

Attendance List

Name	Organisation	Email
1. Kirisimasi Saunamatafa	MNRE / PUMA	kirisimasi.saunamatafa@mnr.gov.ws
2. Raymond Verget	SUNGO	rayv@ymail.com raymond@sungo.ws
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12. Sinapati Uberg	LTA - PPD	sinapati.uberg@lta.gov.ws
13. Gabor Vereczi	UNDP	GABOR.VERECZI@UNDP.ORG
14. Mihoko Kumamoto	UNDP	mihoko.kumamoto@undp.org
15. Oleiva Vitoria Faasau	MNRE / PUMA	oleiva.faasau@mnr.gov.ws

**Summary of Discussion**

Welcome remarks were provided on behalf of the CEO, MNRE & RR, UNDP Samoa MCO

AF Overview - Gabor Vereczi, UNDP provided an overview of the AF and application process.

Structure of Programme Proposal - Mr Graeme Roberts, Consultant, provided an overview of the AF Programme Proposal template contents

Specific areas of discussion focused upon current barriers or gaps in coastal adaptation, institutional arrangements, selection of sites and interventions and knowledge management considerations, among others.

**Community action, on-the ground measures**

It was recognized that there was a need for raised awareness at community and parliament level. Suggested need for an info package for parliamentarians and annual policy briefs

### **Policy and institutional gaps**

Channeling info to the sectors (infrastructure, transport) and communities was recognized as a need to make sure they understand that they are the beneficiaries. Government is building access roads – issue as to whether to reinforce existing coastal roads or build roads inland. There was also a need for the integration of regulations and policies across sectors (e.g. water and agriculture sector. Legislation is substantially progressed through the AG's office but it is not clear how they deal with CC. In the NAPA, education and infrastructure sectors are missing.

Dissemination of CIM Plans – line ministries do not have access other than via the SIAM2 section of MNRE's webpage. The issue is not just necessarily about dissemination, but having the right information from the Plans.

Consideration is being given to rename CIM plans as sustainable village plans

Nat. CC Policy has a general reference on the need for sectoral mainstreaming.

**Institutional arrangements:** MoF has a new structure to co-ordinate all CC funding across all sectors. MNRE MeT office has a CC team

MNRE's role as primary technical responsibility for CCA and mitigation actions have been confirmed. MoF: role in coordination and programming, but not tech execution.

Strategy for Dev of Samoa is reviewed every 6 months to integrate ongoing projects and regulatory and policy tools.

There is a lack of awareness amongst decision makers and parliament, on what is the best approach. When cabinet makes decision to construct a coastal protection structure there is little opportunity to amend this decision. Community mostly wants seawalls, but these are not always justified and can be detrimental.

The adopted CIM strategy – has a procedure to evaluate best measures, solutions. The policy makes it clear that seawalls are the least preferred measures. Current policy process is to simply respond to community demand on hard structures.

Land issues and disputes, customary land ownership – barriers to relocation and planning (move schools, create infrastructure, schools as evacuation centers, safe shelters)

The Planning and Urban Management Act – there is provision for Sustainable . Management Plans (SMP) but no legal requirement for PUMA to prepare SMPs. CIMP plan have been adopted as the basis for a transitional SMP. PUMA is reviewing CIM plan to rename and give statutory status. There is Cabinet decision to develop SMP's commencing with a pilot at Vaitele which has significant freehold land and is an urban district.

There may be no need for most of Samoa to have SMP's , only for Apia and Airport, some vital areas, rest should be continuing the consultative and consensus building process developed under CIM Plans.

#### **Criteria for selection of sites and interventions:**

- Capability of demonstrating broad range of adaptation actions (15 types of actions in CIM Plans (1720 village actions, 394 district actions)
- Directed to priorities set in CIM Plan: use the 15 priority IAMP1, possibility of implementing district-based priorities
- Complementarily with other initiatives: Alignment with PPCR: 8 airport districts, other 8 not yet selected. Range of other projects (demo sites and type of interventions (e.g. upland forest management is incremental benefit to ridge to reef approach.)
- Alignment with sector plans (water sector, forestry management, village DM plans) – new reef-to-ridge plans envisaged.
- Alignment with CCSDP plans (22 villages)
- Represent different stages, situation of dev. Planning: start with areas already having watershed plans and CC proof them, then move to other areas further back in Dev. Planning and replicate.

#### **Scope of interventions**

CIM plans have approx 15 types of measures which are generally within 1-2 KM from coast. There is a need to extend CIMP plans interventions to upstream areas, adopt a watershed and ridge-to-reef approach

#### **Knowledge Management**

Sharing of existing tools, toolkit from various projects (good materials produced but not disseminated) to support cross sectoral learning. For example Climate Early Warning System produced through NAPA projects. Establish district based- info repository and dissemination systems - pooling all plans and development processes – pilot in districts to be addressed through AF programme. Use existing awareness tools: e.g. environmental education resource kit produced through Water Sector Support Programme, DRM resource kit (SIAM 2) – material given to Ministry of Education, have not been used so far. Curriculum is under review and expected to come into effect from 2012.

Gender issues: There is a National Women's Committee and village level women's committees under MWCSD. Some NGOs are also active, like Women in Business Civil Society Support Programme is being developed in MoF to co-ordinate all NGO activities incl CCA.

Key private sector stakeholders include: Institution of Professional Engineers of Samoa; Samoa Chamber of Commerce; Samoa Tourism Authority; Samoa Hotel Association.

**PUMA small grants:** Funds provided only for material but not for supervision, only Development Consent. Need to create simple design standards and have field engineers from start to finish to supervise.



**Adaptation Fund Samoa Programme Proposal:**  
**Enhancing resilience of coastal communities of Samoa to climate change and disaster risks**

Second National Workshop, 10.00am Tuesday 21 June 2011.

Attendance List

Name	Organisation	Email
T. JUD E KOILUWAE	MNRE - PUMA	✓
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## Summary of Discussion

The outcomes of Workshop 1 were presented for review by Gabor Vereczi. UNDP Particular points noted were:

- Use of the CIM Plans as a template for actions – adopting a “ridge to reef” approach.
- Close alignment with other CCA initiatives especially the CRIP/PPCR project.
- Need to use AF funding demonstrate solutions other than seawalls to the community.
- Staged implementation will be important to capture experiences as the programme progresses.
- Knowledge management will be integral – need to look at adaptation experiences beyond Samoa.
- 

Key barriers and gaps were further reviewed against the outline of the programme activities presented.

Nonstructural options were supported to assist in showing the community that there were alternatives to seawalls.

The use of CIM Plans – as underlying framework for the programme implementation has been reiterated, given its underlying theme on community resilience, the extensive participatory consultations processes giving it a real community ownership, and the partnership approach between communities and government that resulted in plans formally endorsed by village representatives

The meeting served to fine-tune the programme structure in its components, outputs and deliverables, and discussed justifications along AF proposal form, especially considering cost-effectiveness and sustainability considerations aligned with existing institutional mechanisms. Detailed discussions took place on alignment with the WB-PPCR programme, in terms of institutional coordination and division of districts to cover the entire country coastline in a complementary fashion with the AF programme.

## Annex 8 Disbursement Schedule

Award id: 00062174  
Project id: 00079525

	Oct-11	Oct-12	Oct-13	Oct-14	Total
Project Funds	1,123,288	2,699,887	2,359,431	1,167,394	<b>7,350,000</b>
Project execution costs	189,250	173,000	152,000	184,000	<b>698,250</b>
IA Fee	171,025	171,025	171,025	171,025	<b>684,101</b>
<b>TOTAL</b>	<b>1,483,563</b>	<b>3,043,912</b>	<b>2,682,456</b>	<b>1,522,419</b>	<b>8,732,351</b>
	Transferred by Trustee in 4 tranches				

## Annex 9 - Abbreviations and Acronyms

ADB	Asian Development Bank
AMSL	Above Mean Sea Level
CBO	Community-based Organisation
CCA	Climate change adaptation
CERP	Cyclone Emergency Recovery Programme
CIF	Climate Investment Fund
COC	Chamber of Commerce
CRICU	Climate Resilience Investment Coordination Unit
CRIP	Climate Resilience Investment Programme (see SPCR)
CROP	Council of Regional Organisations in the Pacific
CSO	Civil Society Organisation
CSSP	Civil Society Support Programme
CSR	Climate Services Reportings
EACC	Economics of Adaptation to Climate Change
EIA	Environmental Impact Assessment
ENSO	El Niño Southern Oscillation
EPC	Electric Power Corporation
GDP	Gross Domestic Product
GEF	Global Environment Facility
HDI	Human Development Index
IAMP1	Infrastructure Asset Management Project Phase 1
ICCAI	International Climate Change

	Adaptation Initiative
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
LTA	Land Transport Authority
MAF	Ministry of Agriculture and Fisheries
MDG	Millennium Development Goal
MNRE	Ministry of Natural Resources and Environment
MWCSD	Ministry of Women, Culture and Social Development
MWTI	Ministry of Works, Transport and Infrastructure
NAPA	National Adaptation Programme of Action
NCCCT	National Climate Change Country Team
NDMP	National Disaster Management Plan
NGO	Non-governmental Organisation
NHS	National Health Service
OLSSI	O Le Siosiomaga Society Incorporated
PPCR	Pilot Programme for Climate Resilience
PPCR-SC	Pilot Programme for Climate Resilience Sub Committee
PMU	Project Management Unit
RAMGS	Risk Adaptation Measures Grant Scheme
SCF	Strategic Climate Fund
SDS	Strategy for the Development of

	Samoa
SIAM2	Samoa Infrastructure Asset Management Phase 2(Project)
SLR	Sea Level Rise
SPCR	Strategic Programme for Climate Resilience (see CRIP)
SPCZ	South Pacific Convergence Zone
SUNGO	Samoa Umbrella of Non-Governmental Organisations
SWA	Samoa Water Authority
TOR	Terms of Reference
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
WB	World Bank
WRD	Water Resources Division

## **Annex 10 - References**

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