

Samoa

**Strategic Programme for Climate
Resilience (SPCR)**

Prepared for the

Pilot Programme for Climate Resilience (PPCR)

February, 2011

Note

The Government of Samoa prefers to use the name “Climate Resilience Investment Programme” (CRIP) rather than “Strategic Programme for Climate Resilience” (SPCR). In the remainder of this document the former name will be used.

Abbreviations and Acronyms

ADB	Asian Development Bank
AMSL	Above Mean Sea Level
CBO	Community-based Organisation
CERP	Cyclone Emergency Recovery Programme
CIF	Climate Investment Fund
COC	Chamber of Commerce
CPUE	Catch Per Unit Effort
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
ICCAI	International Climate Change Adaptation Initiative
IEC	Information Education Communication
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
LTA	Land Transport Authority
MAF	Ministry of Agriculture and Fisheries
MDB	Multi-lateral Development Bank
MDG	Millennium Development Goal
MNRE	Ministry of Natural Resources and Environment
MWCSD	Ministry of Women, Culture and Social Development
MWIT	Ministry of Works, Infrastructure and Transport
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
PPSEAWA	Pan Pacific South East Asia Women's Association
RAMGS	Risk Adaptation Measures Grant Scheme
SCF	Strategic Climate Fund
SDS	Strategy for the Development of Samoa

SIAM	Samoa Infrastructure Asset Management (Project)
SLR	Sea Level Rise
SPCR	Strategic Programme for Climate Resilience (see CRIP)
SPCZ	South Pacific Convergence Zone
SST	Sea Surface Temperature
SUNGO	Samoa Umbrella of Non-governmental Organisations
SWA	Samoa Water Authority
SWDS	Solid Waste Disposal Site
TA	Technical Assistance
TOR	Terms of Reference
TTL	Task Team Leader
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
VPD	Vehicles Per Day
WB	World Bank
WRD	Water Resources Division

PILOT PROGRAMME FOR CLIMATE RESILIENCE

Summary of Strategic Program for Climate Resilience

1. Country/Region:	Samoa/Pacific	
2. PPCR Funding Request (in USDmillion)::	<i>Loan:</i> 0.00	<i>Grant:</i> USD 25 million
3. National PPCR Focal Point:	Ministry of Finance, Government of Samoa	
4. National Implementing Agency (Coordination of Investment Strategy):	Ministry of Finance, Government of Samoa	
5. Involved MDB	The World Bank Group	
6. MDB PPCR Focal Point and Project/Programme Task Team Leader (TTL):	<i>Headquarters-PPCR Focal Point: Samuel Wedderburn</i>	<i>TTL: Mr Samuel Wedderburn</i>
7. Description of SPCR:	<p>(a) <i>Key challenges related to vulnerability to climate change/variability:</i></p> <ul style="list-style-type: none"> ▪ Damaging effects of climate change include floods, damage resulting from strong winds and high seas, coral bleaching and droughts, which is translating into major consequences for lives and livelihoods, and hence progress in achieving the Millennium Development Goals. <p>(b) <i>Areas of Intervention – sectors and themes</i></p> <ul style="list-style-type: none"> ▪ <i>Sectors:</i> Roads and highways; general agriculture, fishing and forestry; flood protection; participation and civic engagement ▪ <i>Themes:</i> Climate change; biodiversity; other environment and natural resources management; natural disaster management; water resources management; <p>Investment Projects</p> <ul style="list-style-type: none"> ▪ Investment Project 1: Enhancing the climate resilience of the West Coast Road (Apia to Airport) ▪ Investment Project 2: Enhancing the climate resilience of coastal resources and communities <p>Technical Assistance</p> <ul style="list-style-type: none"> ▪ Establishing a climate change adaptation trust fund for Samoa; <p>(c) <i>Expected Outcomes from the Implementation of the SPCR</i></p> <ul style="list-style-type: none"> ▪ Coastal communities and resources, and key infrastructure, with enhanced resilience to climate change, including climate and weather extremes and variability; ▪ Increased engagement of civil society in initiatives to reduce the adverse consequences of climate change; ▪ Improved capacity of the Ministry of Finance and other government agencies to coordinate, manage and implement investments that enhance the resilience of Samoa to climate change; ▪ Lessons learned and success stories documented and shared, especially by way of the regional track of the PPCR – Pacific pilot; and ▪ A mechanism that will result in sustainable financing of initiatives that build on the CRIP. 	

8. Expected Expected Key results from the Implementation of the Investment Strategy (consistent with PPCR Results Framework):

Result	Success Indicator(s)
<p>Investment Project 1: Enhancing the climate resilience of the West Coast Road (Apia to Airport)</p> <p><u>Key Results:</u> Increased resilience of the West Coast Road infrastructure to extreme weather effects Improved transit conditions for all road users Reduced routine and periodic maintenance costs</p>	<ul style="list-style-type: none"> ▪ Number of road closures or diversions ▪ Number of accidents involving injury or death ▪ Annual per kilometre maintenance costs
<p>Investment Project 2: Enhancing the climate resilience of coastal resources and communities</p> <p><u>Key Result:</u> Reduce vulnerability to and enhance the capacity of natural systems and coastal communities to recover from impacts (chronic and acute) associated with climate change and extreme weather events.</p>	<ul style="list-style-type: none"> ▪ Communities demonstrate awareness of habitat linkages (both upstream/downstream) and across land/sea interface in climate resilient planning and use of resources (surveys to measure awareness) ▪ Ability of communities to recover from economic and environmental shocks associated with climate change ▪ Degree to which key ecosystem services restored or enhanced over time (e.g. change in mangrove area) ▪ Effort required/ability of communities to cope with chronic, climate-related disturbances
<p>Technical Assistance: Establishing a climate change adaptation trust fund for Samoa</p>	<ul style="list-style-type: none"> ▪ Trust fund established, and ready for contributions from development assistance partners

9. Project and Programme Concepts under the SPCR:

Project/ Programme Concept Title	MDB	Requested PPCR Amount (\$) ¹	Grant or Loan	Expected co-financing (\$)	Preparation grant request (\$)	Total PPCR request	MDB Fee
Investment Project 1: Enhancing the climate resilience of the West Coast Road (Apia to Airport)	World Bank	15 million	Grant	2.6 million	200,000	15 million	
Investment Project 2: Enhancing the climate resilience of coastal resources and communities	World Bank	9.7 million	Grant	12.0	400,000	9.7million	
Technical Assistance: Trust Fund	World Bank	0.3 million	Grant	20,000	0.00	0.3 million	
TOTAL		25 million		14.62	600,000	25 million	

¹ Includes preparation grant and project/programme amount.

<p>10. Timeframe (tentative) – Approval² Milestones</p> <p>Project 1: FY 2011 Project 2: FY 2012 Technical Assistance (Trust Fund): FY 2011</p>
<p>11. Key national stakeholder Groups involved in SPCR design³:</p> <ul style="list-style-type: none"> ▪ Ministry of Finance ▪ National Climate Change Country Team ▪ Ministry of Natural Resources and Environment ▪ Ministry of Women, Community and Social Development ▪ Ministry of Works, Transport and Infrastructure ▪ Land Transport Authority ▪ Samoa Water Authority ▪ Electric Power Corporation ▪ Ministry of Agriculture and Fisheries ▪ Samoa Umbrella of Non-governmental Organisations (SUNGO) ▪ Samoa Women’s Committee Development Organisation ▪ Pan Pacific South East Asia Women’s Association (PPSEAWA) ▪ Samoa Chamber of Commerce ▪ Women in Business Development Inc. ▪ Samoa Farmers Association ▪ Secretariat Pacific Regional Environment Programme (SPREP) ▪ Professional Engineers of Samoa
<p>12. Development Partners involved in SPCR/CRIP: ADB, AusAID, NZAID, European Union, JICA, UNDP</p>

²Expected signature of loan/grant agreement between government and MDB.

³ Other local, national and international partners expected to be involved in design and implementation of the strategy.

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PART 1

INTRODUCTION AND BACKGROUND

Introduction

1. As a small island developing state located in the southwest Pacific Ocean, Samoa's vulnerability to climate change is high, and growing. Increases in the frequency and intensity of extreme weather and climate events, such as heavy rainfall, strong winds, droughts and high sea temperatures and levels, are already occurring. These and other events have claimed lives, caused severe damage to infrastructure and other economic assets and had adverse effects on livelihoods. Importantly, these changes and their adverse consequences are projected to escalate in the near and longer terms.

2. Vulnerability is heightened by homes, infrastructure and sources of livelihood being overwhelmingly concentrated in coastal areas. Limited financial and human resources, including traditional resources, reduce the capacity for effective planning and other responses that will enhance resilience to climate change. Samoa has a limited base of local sustainable economic opportunities and is losing its traditional sustainable life skills as its natural resources and culture respond to both internal and external pressures. As for other Pacific Island economies, Samoa is highly vulnerable to external economic fluctuations and changing world trade policies and practices. A major challenge for Samoa is ensuring that climate change does not reverse its hard won development gains, worsening the plight of the most vulnerable, including some communities, women, children, youth and the disabled.

3. The proposed investment programme, and supporting technical assistance, will build on analytical and capacity building initiatives undertaken in Phase 1 of Samoa's Pilot Programme for Climate Resilience (PPCR), will learn from, scale up and add value to adaptation interventions already being piloted in Samoa, will fill gaps in Samoa's national adaptation programme, and will result in a transformation from project-based to programmatic approaches to adaptation. Samoa's National Climate Change Country Team and other mechanisms will coordinate these collective efforts, in order to avoid duplication of effort and missed opportunities.

Background

4. The Pilot Programme for Climate Resilience (PPCR) of the Strategic Climate Fund (SCF) was established under the Multi-donor Climate Investment Fund (CIF). It aims to help countries transform to a climate resilient development path, consistent

with poverty reduction and national sustainable development goals. The PPCR not only complements, but goes beyond currently available adaptation financing in providing finance for programmatic approaches to embed climate resilience in development planning, policies, and strategies. Importantly, PPCR is designed to catalyse a transformational shift from “business as usual” sector-by-sector and project-by-project approaches to adaptation. PPCR also promotes a participatory approach when preparing a broad-based strategy to achieving enhanced climate resilience at the national and sub-national levels, in the medium- and longer-terms.

5. In each participating country the PPCR is structured in two phases. Phase I aims to strengthen the enabling environment for addressing climate risks. It includes tasks such as facilitation of a cross-sector dialogue to arrive at a common vision of climate resilience in the medium and long-term, and formulation of a strategic approach for climate resilience. During Phase I a Strategic Programme for Climate Resilience (SPCR) (equivalent to the Climate Resilience Investment Programme (CRIP) in Samoa) is prepared. This outlines an underlying investment programme. Endorsement of the SPCR by the PPCR Sub-Committee (PPCR-SC) of the SPCR marks the transition to Phase II. Phase II focuses on implementing the SPCR through transformative actions such as support to policy reform, institutional capacity building, and scaling-up resilience building investments in key sectors.

6. PPCR is being implemented in nine pilot countries: Bangladesh, Bolivia, Kingdom of Cambodia, Republic of Mozambique, Nepal, Republic of Niger, Republic of Tanzania, Yemen, and Zambia. In addition, regional programmes have been established in the Caribbean and the Pacific. Samoa was one of three countries selected for participation in the PPCR for the Pacific region, which also includes a regional track. Selection was on the basis of risk and vulnerability profiles (vulnerability to sea-level rise; risk of climate disasters; impacts on marine ecosystems; adaptive capacity) and the ability to eventually integrate climate resilience into development planning and sector policies, where relevant, and to promote scaling-up of actions and investments to achieve greater climate resilience. This entails preparedness on the part of Samoa to participate in the PPCR in terms of national policies and programmes that support climate change or climate sensitive developmental issues and the institutional capacities and human resources to implement such activities. Such requirements imply the existence of stable and capable national systems of governance.

PPCR - Samoa

7. As an approved pilot country, Samoa is eligible to receive financial and technical assistance to support efforts for building climate resilience. PPCR also provides the added value of assisting the Government to manage its climate change

adaptation resources efficiently and comprehensively, avoiding duplication and enabling a platform for leveraging support from both regional and international development partners, including the private sector. The pilot programme adopts a consultative process that involves all relevant stakeholders and facilitates collaboration and cooperation between multi-lateral development banks (MDBs) – the Asian Development Bank (ADB), the International Finance Corporation (IFC) and the World Bank (WB) - to jointly work in close collaboration with the Government, to both design and implement resilience building interventions. The WB Group and ADB jointly implement the Pacific PPCR pilot. This includes a regional component as well as national initiatives in Tonga, Papua New Guinea and Samoa.

8. In October 2009 Samoa submitted an expression of interest to participate in the PPCR. On August 29, 2010 the Government of Samoa formally submitted the Phase 1 proposal for the PPCR in Samoa. On October 13, 2010 the PPCR-SC approved US\$500,000 in financing as part of the regional pilot programme for the Pacific. The funds are to support preparation of Samoa's CRIP and related activities.

9. In its expression of interest, Samoa identified the following as some of the key objectives and priorities relating to climate resilience:

- to develop and implement immediate and urgent project based activities to adapt to climate change and climate variability;
- to protect life and livelihoods of the people, infrastructure and environment;
- to incorporate adaptation measures and goals into national and sectoral policies, and development goals; and
- to increase awareness of climate change impacts and adaptation activities in communities, civil society and government.

10. The Government of Samoa appointed the Ministry of Finance (MoF) as the focal ministry for the PPCR. To the extent possible, the PPCR will use implementation frameworks that are already in place. In accordance with the PPCR Guidelines there have been several missions, led by the Government of Samoa, to assist in preparing the Phase 1 proposal as well as the CRIP. Annex 1 contains further background information on preparation and related matters.

11. Through participatory processes such as those related to preparing its National Adaptation Programme of Action (NAPA) and the National Policy for Combating Climate, Samoa has already made considerable progress in analysis, policy development and planning related to climate change. Due to this strong enabling environment for adaptation that already exists in Samoa it was agreed that Phase 1 will have a short duration of around six months. For the same reason, preparation for Phase 2 began concurrently with the initiation of Phase 1 activities.

12. The Government of Samoa, in consultations with stakeholders (see Annex 2), proposed that the PPCR will focus investment interventions as follows:

- Investment Project 1: Enhancing the climate resilience of the West Coast Road (Apia to Airport); and
- Investment Project 2: Enhancing the climate resilience of coastal resources and communities.

13. In addition, a technical assistance project has been identified to assist Samoa in designing a climate change adaptation trust fund. Technical assistance would also be provided during preparation to undertake studies which will inform project design, and during implementation

14. The design and implementation process of this pilot programme will provide a platform for identifying synergies with new and on-going climate resilient initiatives and leverage funding, while avoiding duplication of effort and resources. The implementation will build on the comparative advantages of relevant stakeholders in Samoa, including government, civil society, the private sector, academia and bilateral and multilateral development assistance partners, in order to achieve a participatory, coherent and sustainable response to the threat of climate change.

15. The Samoa CRIP will also benefit from synergies with the Regional Track of the PPCR, though is not dependent on it. The synergies could include technical support for mainstreaming climate resilience, the transfer of lessons and best practices from elsewhere, and assistance in the capture and analysis of relevant data to better understand the impacts of climate change. Lessons learned from Samoa's implementation of the CRIP will also be disseminated through the Regional Track.

16. In line with the PPCR guidelines, the Samoa's CRIP has been developed as a broad-based strategy for achieving climate resilience at the national level in the medium and longer-terms, using as its basis the Strategy for the Development of Samoa (SDS), the NAPA and other policy and planning instruments. The CRIP was prepared using inclusive and participatory processes (described below in paragraphs 18 to 23) involving all relevant stakeholders, with particular reference to the beneficiaries, especially women and the most vulnerable communities.

17. Presentation of the CRIP is divided into three parts. Part 1 provides the background and rationale; Part 2 identifies the proposed Investment Programme and summarises the overall programmatic approach and justification for components in light of Samoa's agreed strategic approach to building climate resilience; and Part 3

concludes with the request for Preparation Grant funds to develop a quality investment programme by financing analytical and design tasks.

Participatory Processes Used During Preparation of the CRIP

18. Following Samoa's acceptance of the offer to participate in the PPCR, the Ministry of Finance, as the Focal Point for the PPCR, invited government agencies to participate in a stock-take of ongoing climate adaptation activities in order to document the baseline for the formal joint mission that would launch the Programme. During this time initial stakeholder roundtable meetings were also held, to ensure that all parties were fully informed on PPCR preparatory procedures as well as on opportunities to participate in preparing for, and implementing, the PPCR in Samoa. Every reasonable effort was made to ensure equitable and meaningful participation in these and subsequent meetings.

19. The first joint-mission held discussions with government agencies, donor partners, and representatives from civil society and private sector, in both roundtable and bilateral meetings. Among the many stakeholders, the private sector was found to be the least informed and engaged in the debate on climate change adaptation. This is possibly due to the lack of familiarity with the linkages between a global environmental issue (climate change) and their day-to-day business operations. The private sector is a key agent in the identification and implementation of climate adaptation measures, and thus deserves and is receiving full attention in the PPCR.

20. A follow-up technical mission took place in mid July 12 -16, 2010. This provided an opportunity to convene further meetings with the National Climate Change Country Team (NCCCT) as well as the following stakeholder groups: Government, private sector, non-governmental organisations (NGOs) and development partners. The meetings considered an initial draft of the Phase 1 proposal and suggested revisions. Three key messages arising from the discussions with national stakeholders were: (i) the PPCR must build on the extensive work undertaken in Samoa to date, and the wide experience that has resulted; (ii) there is a need to ensure effective coordination and integration of PPCR with Samoa's many ongoing and planned activities related to climate change; and (iii) to the extent possible, coordination and implementation are to be achieved by making use of existing institutions. The CRIP continues the approach of elaborating and addressing these requirements.

21. Following the July mission several country-led, multi-stakeholder meetings were held. These culminated in Government endorsement of the Phase 1 proposal, including an indicative programme for Phase 2. After the PPCR-SC approved the Phase 1 proposal on October 13, 2010 further inclusive, multi-stakeholder activities

were undertaken as part of implementing the Phase 1 activities. This included preparation of the CRIP. One of the main outcomes of these consultations, facilitated by the second technical mission (December 13 to 17, 2010) and the Second Joint Mission (January 31 to February 11, 2011), was preparation of a draft CRIP. The detailed investment programme was discussed, including in a national roundtable attended by representatives of the main stakeholder groups from Government, development partners and civil society, including the private sector.

22. At the roundtable and in other consultations, nongovernmental organizations (NGOs) highlighted the issue of their limited capacities, especially with respect to raising awareness and assisting communities and other stakeholders to address climate and other concerns. The recently established Civil Society Support Programme (CSSP) provided details on their role in building capacity and in the harmonization of grant making for civil society in Samoa. In individual and joint meetings the private sector raised issues related to their limited awareness of the implications of climate change for the sector and how these might best be addressed. These concerns have been taken into account in the CRIP, including building awareness and capacity in the private sector, as well as their involvement in small infrastructure works at district and community levels and in the proposed road upgrade project. Ongoing meetings with Samoa's development partners held both jointly and on an individual basis, have helped ensure that the CRIP builds on their recent and planned efforts. The development partners also helped identify gaps that PPCR-Samoa might address. A multi-stakeholder meeting held immediately prior to finalising the CRIP included representatives of Government, civil society, development partners and the private sector. The discussions helped to ensure that the CRIP represents a collective view of how Samoa might best enhance its climate resilience using PPCR resources. Further details on the stakeholders and the consultation processes are provided in Annex 2.

23. The above participatory processes were designed to ensure national ownership of PPCR-Samoa. This included reaching a consensus on up-to-date priorities for action by the public and private sectors, and agreeing on the Phase 2 investment programme (i.e. the CRIP) and related activities.

Section 1

Regional Perspective and Country Context

The Pacific Islands Region

24. 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.

25. 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 regions most at risk to the adverse consequences of climate change (IPCC, 2007). The special nature of the islands and their ocean surrounds have inspired the development of innovative methods and tools to assess their vulnerability to climate change, as well as pioneering efforts to use the findings to inform policy making, planning, resource mobilization and actions on the ground. Despite these efforts, Pacific Island countries have yet to see appreciable benefits in terms of reductions in the climate-related risks and vulnerabilities they face. With climate risks increasing in the Pacific, even greater and smarter effort is required.

26. 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.

27. The climate of the Pacific region shows considerable spatial and temporal variability. These patterns are influenced by many contributing factors, including the

seasonally varying convergence zones (e.g. the South Pacific Convergence Zone) and the El Niño Southern Oscillation (ENSO). The latter is the dominant mode of year to year variability.

28. Most Pacific Island countries are located in tropical and sub-tropical regions with warm year-round temperatures and high to moderate rainfall. However, these average conditions obscure the relatively large inter-annual variations in climate as well as occurrences of extreme climatic events. These can cause considerable damage and disruption. 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.

29. 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 Study⁴ is a notable exception and is proving invaluable for preparation and implementation of the CRIP.

30. The recent, and considerable, national and regional efforts in disaster management (disaster risk reduction and disaster preparedness and response) appear to be delivering results, notably in the number of fatalities per disaster, but more recently in the number of people affected by disasters. This is despite population changes which now place more people at risk and despite indications that the intensities of tropical cyclones have increased in recent decades. Progress in implementing disaster-risk reduction in the region has been made possible by the assistance and/or the leadership of disaster-risk reduction and disaster-management development partners. Where a country has had success it is largely through the collaboration of the different government agencies of the implementing countries and or through strong partnership with community organizations or civil society organizations.

31. However, the reduced economic and social consequences of the extreme events experienced in the 2000s may also be due to the anomalous nature of that decade in that there have been relatively fewer tropical cyclones, and hence fewer

⁴ The EACC study (World Bank Group, 2010) was conducted by a partnership consisting of the World Bank (leading its technical aspects); the governments of The Netherlands, The United Kingdom, and Switzerland (funding the study); and the participating case study countries. The EACC study includes a global study and seven country studies, including the Samoa study.

extreme events of disastrous proportions. This is likely associated with the decade being dominated by La Niña conditions, during which cyclone frequency is low for much of the Pacific. Importantly, climate projections suggest that, as a result of global warming, conditions in the Pacific will become increasingly El Niño-like. For this reason, cyclone frequencies are likely to increase for much of the Pacific. Thus, the immediate future will likely see a change from the relatively benign conditions of the present decade to conditions more reminiscent of those of the 1980s, when El Niño conditions dominated, and the frequency of weather and climate extremes was much greater than now. On top of this, the intensity of tropical cyclones may well be substantially higher.

32. Thus, 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.

33. Numerous studies suggest that global warming is likely to accentuate the spatial and temporal variations in weather and climate in the Pacific, including the differences from normal that result from ENSO events. Some countries will experience more floods and other countries will have more droughts. Generally, the countries with higher rainfalls will become wetter, while drier countries will experience more droughts. Increases in high sea-level events (e.g. storm surges), rainfall, extreme weather and climate events, air and sea temperatures, water shortages and erosion will cause increasingly significant economic and related problems for all sectors of the island economies and societies.

34. 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 CO₂, 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

General Description

35. 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 km². 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.

36. 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 km², 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.

37. The Samoan Government continues with its goal of providing good infrastructure and services for people regardless of where they reside, as evidenced by increased access to basic and essential services throughout the country. Customary and traditional rights, particularly regarding land tenure, persist as a major constraint to development; however work is in progress to determine ways by which customary owned land, much of which lies idle, could be accessed for development purposes while at the same time ensuring that ownership is not compromised.

38. Most of Samoa's important physical and social infrastructure is located along the coast. This highlights the importance of strengthening development policies and plans in ways that ensure climate and related pressures will not increase the vulnerability of communities or risks to infrastructure and other important assets.

Population

39. At the time of the 2006 census there were 180,741 persons in Samoa, with 76% residing 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 of a Samoan 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.

40. 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%. The increasing number of people residing outside traditional village settings has significant development implications for social and economic infrastructure, as well as social concerns and the associated social governance of different village groups. 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.

Development Context

41. 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).

42. In March 2006 the United Nations (UN) reviewed Samoa's LDC status and in December 2007 recommended graduation to Developing Country status in December, 2010. Samoa requested that this decision be revisited in light of the global economic crisis and the disastrous tsunami in September 2009 which resulted in 155 deaths (more than five times the total number of deaths caused by cyclones from 1990 to 2010), the complete destruction of several coastal villages, and destruction of 20% of hotel tourist room capacity. Graduation out of LDC status is now set for January 2014. With an income per capita of USD 3,137 in 2007, Samoa is a medium human development country with a global Human Development Index (HDI) ranking of 94 out of 182. Samoa's HDI of 0.771 places it third in the Pacific region, behind only Australia and New Zealand.

43. Samoa's status in the Pacific HDI (4th out of 15) and the Human Poverty Index (1st, up from 4th in 1998) has been generally high. Samoa is making relatively good progress towards the achievement of its Millennium Development Goals (MDGs). However, indicators such as the number of households facing hardship are

raising important considerations that can no longer be ignored. The results of the Participatory Assessment on Poverty carried out in 2002 and 2008 suggest that hardship is becoming an integral part of daily life at the household level. There is also tendency for more households and individuals to be experiencing growing degrees of hardship and difficulty in meeting their basic expenditure needs. Main drivers are the low level of income generating opportunities, downsizing of one of the biggest employers in Samoa, and the rapid increase in prices of goods and services that are needed by households in Samoa.

Samoa's Economy

44. 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.

45. 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.

46. 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.

47. 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.

Environment and Resources

48. Samoa's water system services roughly 95% of the population, with the remainder receiving its supply exclusively from wells, springs and small rainwater reservoirs. Although water is widely available, only a small proportion of the population receives safe, treated water. In part, this is because some villages rely upon village-managed water supplies that are neither treated nor appropriately maintained.

49. Currently, there are twenty-two water schemes in Samoa: eighteen in Upolu and four in Savai'i. Land clearance in water catchments poses a significant risk to Samoa's water supply. Water quality is also threatened by the influx of pathogenic organisms - caused by discharges of untreated wastewater into otherwise clean supplies - that render water unfit for human consumption for extended periods of time. There is widespread disease from contaminated water supplies and poor sanitation systems. Diarrhoea and other respiratory infections continue to be the major cause of infant mortality whilst diabetes and other non-communicable diseases continue to affect adults in growing numbers.

50. Household waste is composed mostly of organic refuse, but plastics and other inert materials constitute a significant and growing share of waste output. Management of residential waste has changed significantly over the last decade. Before a roadside collection service was established, residential waste was typically managed by individual households. Waste was burnt, or buried in shallow pits on the property. A roadside collection service began in the Apia urban area in 1997. By 2000 this was extended to whole of Upolu and Savai'i. In 2005, it was further expanded to cover the islands of Apolima and Manono.

51. All household waste collected by the roadside pick-up service is delivered to a centralised solid waste disposal site (SWDS). A semi-aerobic landfill system used at the Upolu SWDS opened in 2004. This replaced the old, unmanaged dump that had been in operation at the same site since 1995. Before 1995, waste was dumped in the Vaitoloa mangroves. The semi-aerobic landfill system used on Savai'i came into operation in 2006. Before that waste was dumped at the Vaia'ata quarry.

Samoa's Climate

52. Samoa's climate is characterised by high rainfall and humidity, near-uniform temperatures throughout the year, the dominance of southeasterly 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 windspeeds in excess of 250 kph occurring in any ten year period. The southeasterly 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 southeasterlies 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.

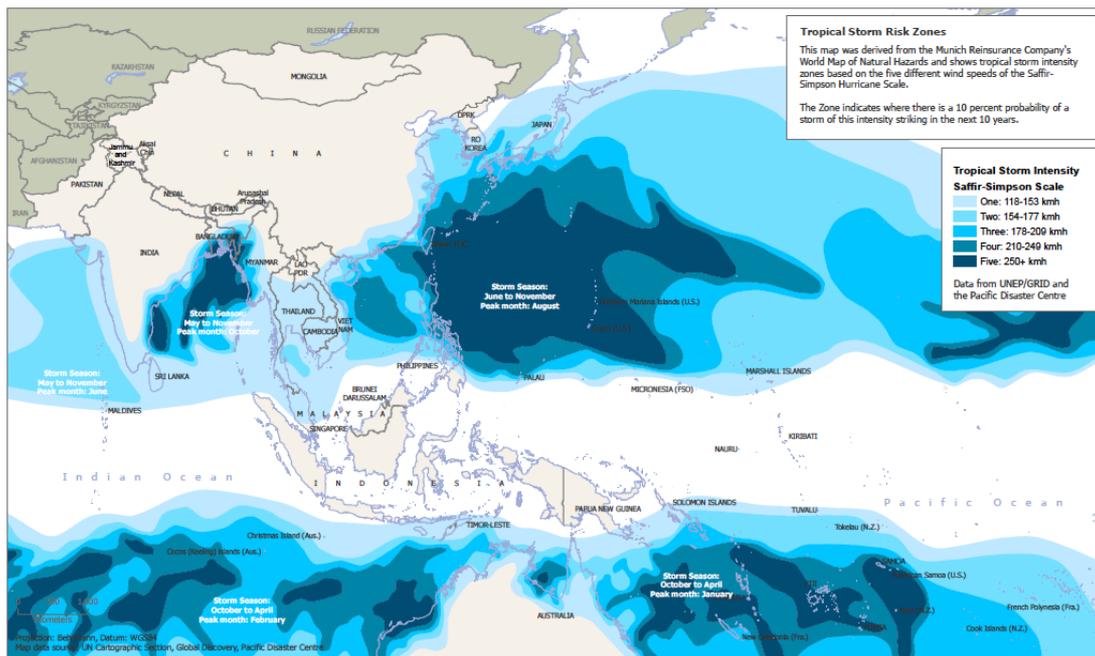


Figure 1. Tropical storm risk zones for the Pacific. Source: OCHA (2006).

53. 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.

54. 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.

55. Table 1 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.⁵

Table 1
Economic Damage Caused by Recent Natural Disasters in Samoa

Event	Return period	Asset damage	Loss of GDP	Total GDP	Loss as % of GDP	Notes
	Years	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

Source: World Bank estimates

56. 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.

⁵ For example, over the years 1992-94 GDP fell 7-8% below the cyclically-adjusted trend in GDP, apparently as a consequence of the combined effects of Cyclones Ofa and Val. The shortfall was about 12% for agricultural GDP in 1994 since agricultural assets, particularly coconut palms, were severely affected by Cyclone Val. However, by 1996 both total and agricultural GDP had recovered to match the pre-disaster trends.

Section 2

Climate Risks to the Development of Samoa

Climate Change and Samoa's Development

57. Climate change threatens Samoa's development progress. Risk levels for most of the weather- and climate-related hazards are increasing over time, driven by the growing exposure of people and assets, for example through rapid economic and urban growth in coastal areas prone to flooding and storm surges. There are many and often strong interactions between development initiatives, as encapsulated in the MDGs, and extreme weather and climate events. Any increase in these events as a result of climate change will threaten progress to achievement of Samoa's MDGs.

58. Samoa has already achieved MDGs 4 and 5 in relation to child and maternal health, MDG 2 (universal primary education), and MDG 6 (combat HIV/AIDS, TB, NCDS and other diseases). For MDG1, Samoa is on track given the low level of food poverty but not on track to reduce basic needs poverty. For MDG 3 (gender equality and empower women) Samoa is on track with education but off track with empowerment of women. Samoa is on track for MDG 7 (environmental sustainability), but some information gaps remain. A similar situation exists for MDG 8 (global partnerships). Significant challenges exist in sustaining and improving achievements and the distribution of development benefits is uneven, especially between urban and rural areas and between Upolu and the other islands.

59. PPCR will contribute to the achievement of Samoa's MDGs, and sustaining that success, in many ways, including the following:

- MDG 1 – through the increased resilience of income generation and other livelihood opportunities in rural communities;
- MDG 2 – through activities that will further enhance the resilience of school buildings in vulnerable coastal locations;
- MDG 3 – through community-based adaptation and other initiatives that include equitable involvement of women, men, girls and boys as well as equitable sharing of benefits;
- MDGs 4, 5 and 6 – through community-based adaptation that will reduce the vulnerability of communities, and enhance their overall resilience;
- MDG 7 – through implementation of prioritised Coastal Infrastructure Management (CIM) Plans and strengthened disaster risk management; and
- MDG 8 – through the partnership between PPCR, the World Bank, ADB, Samoa and other Pacific Island countries, the latter by of the Pacific regional component of the PPCR.

60. The occurrence of weather- and climate-related hazards which typically result in disasters is beyond human control. Increases in both the frequency and intensity of these extreme events, an agreed consequence of global warming, are something the world must learn to live with in the foreseeable future. However, the economic and social consequences that turn these hazardous events into disasters are definitely under the influence of human society. Due to its serious and cross-cutting consequences, climate change provides a compelling incentive to create a new development paradigm that links policy setting with investments, as well as an opportunity for Samoa, working with its development assistance partners and development practitioners, to ‘do development differently’. This includes responses to climate change being integrated into policies and action plans to achieve the MDGs and other development goals. Such actions can and should deliver substantial co-benefits. Where they will deliver substantial development benefits, even if the climate does not change as anticipated, these interventions are often termed ‘no regrets’ initiatives. In doing so it is important to maximise synergies, including those between mitigation and adaptation, and between adaptation and disaster risk reduction. For example, a mitigation project that improves energy security and access by providing power from renewable energy sources to remote rural communities in Samoa can at the same time reduce vulnerability to extreme weather and climate events through the use of a more reliable, decentralised power source that in turn allows the use of refrigeration to store foods and medication. A recent example of such an initiative is the solar power scheme on Apolima Island.

61. Samoa recognised that its responses to the climate and other natural hazard risks were being impeded by the inefficiencies arising from the largely artificial and counter-productive distinction between disaster risk reduction and climate change adaptation. Primarily, disaster risk reduction is concerned with risks from present climate variability and extremes, whereas climate change adaptation is concerned with the current increase in extreme weather and climate events as well as the future changes in those risks which should be taken into account in development.

62. Especially in the short and medium term, most of the adverse consequences of climate change for Samoa will materialise through extreme events which often reach disaster proportions. Thus, reducing disaster risk is a key no-regrets climate change adaptation strategy – regardless of whether or not global efforts are successful in arresting climate change through mitigation, investing more in disaster risk reduction is a fail-proof way to avoid setbacks to the development agenda and at the same time reduce requests for humanitarian and crisis-related assistance. Achieving a convergence between disaster risk reduction and climate change adaptation requires strong national and global coordination mechanisms that encourage systematic dialogue and information exchange between climate change and disaster reduction agencies, focal points and experts.

63. Samoa has made considerable progress in this regard. Climate change adaptation and disaster risk reduction are integrated institutionally (the relevant agencies are both in the Ministry of Natural Resources (MNRE)) and administratively, by way of the coordinating and advocacy roles of the National Climate Change Country Team. National and some sectoral development plans make relatively comprehensive reference to climate-related risks and have implemented programmes and projects to help stakeholder groups reduce their vulnerability to climate change, including climate-related disasters. But the site specific nature of adaptation, and the high costs, limit the benefits for sectors, communities and the like. However, approaches to village disaster awareness and preparedness are deliberately designed to simultaneously manage climate-related and other natural hazards and pressures leading to the loss of biodiversity. For example, funding provided under the Samoa GEF Small Grants Programme helped Vaiusu village to improve the mangrove ecosystem biodiversity for both food security and to protect the community from storm surges. The mangrove was the most highly degraded mangrove area in Samoa. The project involved replanting the mangrove area along the whole of Vaiusu Bay, as part of a large restoration project intended to also cover neighbouring villages.

Current and Anticipated Climate-related Risks for Samoa

64. 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.

65. 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.

66. 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.

67. 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.

68. A monthly rainfall below the ten percentile is used as an indicator of drought, with drought frequency in Samoa being strongly linked to the occurrence of El Niño events. If El Niño events are more common in a warming world, this will have significant implications for the frequency, duration and intensity of droughts in Samoa.

69. 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.

70. 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 2, 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,

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 2
Projected Changes in Climate Variables by GCMs and Grid Cell*

GCM	Cell latitude	Cell longitude	Samoa region	Changes in climate variables in 2050 relative to baseline					
				Total precipitation (mm)	Precipitation Dec-Feb (mm)	Precipitation Nov-Apr (mm)	Mean temperature (°C)	Maximum temperature (°C)	Minimum temperature (°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

Source: World Bank analysis – see World Bank (2009)

* SN = Savaii North, SS = Savaii South, UN = Upolu North, and US = Upolu South

71. The situation is rather more complicated for precipitation. Notwithstanding its name, the Global Wet scenario projects changes in total annual precipitation by grid cell in the range -21 to +106 mm by 2050 with a value of -21 mm for Apia. In contrast, the Global Dry scenario projects changes in the range +277 to +344 mm by 2050 with a value of +344 mm for Apia. There are also significant changes in the seasonal distribution of rainfall. For example, total precipitation for December-February - the prime period for cyclones - falls by about 40 mm by 2050 in the Global Wet scenario, whereas precipitation during the rainy season from November to April is stable or increases slightly in Upolu South. Thus, the dry season becomes drier while the transitional months of the wet season become wetter in this scenario. The shift is not as marked for the Global Dry scenario, but still roughly one-half of the increase in annual precipitation occurs during the transitional months of the wet season.

72. 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.

73. The South Pacific Sea Level and Climate Monitoring Project has collected sea level and climate data at one location in Samoa since 1993. The most recent country report published in December 2009 gives an average increase in sea level of 4.6 mm per year at Apia. If sustained over the 21st century this would imply an increase of 46 cm from 1990 to 2100.

Samoa's Vulnerability to Climate Change

74. Samoa's Second National Communication includes an updated vulnerability assessment for Samoa. This can act as a baseline for PPCR-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.

75. 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.

Sector Vulnerabilities

Water

76. 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.

77. 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.

78. 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.

79. 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.

Health

80. 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.

81. 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.

82. 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.

83. 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

84. 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.

85. 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.

86. 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.

87. 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.

88. 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.

89. 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

Fisheries

90. In recent years, the fisheries sector has concentrated much of its efforts on reviving coastal marine resources significantly damaged or indeed destroyed by cyclones and destructive fishing. All components of fisheries (oceanic fisheries, coastal fisheries and aquaculture) show very high vulnerability to climate variability and change.

91. Because it can alter environmental conditions relevant to productivity and habitats for pelagic species, sea surface temperature (SST) is critical to both the coastal and oceanic sectors in the immediate to long-term. For aquaculture, rising SST threatens broad stock like giant clams, as water temperatures exceed normal tolerance levels.

92. Extreme winds affect all components of fisheries. For oceanic and aquaculture fisheries, infrastructure becomes more vulnerable as fishing vessels smash into each other at berth and alongside the wharf and the hatchery required for spawning is damaged or destroyed by flying objects and fallen trees.

93. The coastal and aquaculture components of fisheries is also vulnerable to extreme rainfall as run-off from land affects the coastal marine environment. Extreme wave action is projected to have a devastating effect on coastal fishery and aquaculture. Wave action is also important for the oceanic component of fishery, as it can significantly reduce catches.

94. Rising temperatures can have a disastrous effect on the marine ecosystem. Dinoflagellates, which coral polyps rely upon for survival, are highly sensitive to fluctuations in temperature. Extreme rises in temperature can force these microorganisms to vacate coral polyps, thus compromising the health of reefs. This process is commonly known as coral bleaching. Coral reefs support a variety of marine organisms, and their populations can rapidly collapse after a bleaching incident. Despite numerous bleaching events elsewhere in the Pacific, no major cases of coral bleaching have been reported to Samoa's Ministry of Agriculture and Fisheries.

95. Adaptation measures include managing fisheries resources, establishing marine protected areas and reserves, restoring vital habitats such as mangroves and coral reefs, improving public understanding and devising and implementing sound policy and regulation. PPCR-Samoa will undertake many of these responses, in community-based initiatives.

96. Current fisheries policies and systems fail to provide a coherent plan-of-action to address the effects of climate change. The current Fisheries Act 1988, which covers all fisheries, should be updated to include a system capable of addressing climate-change risks. Such a system should focus on a thorough analysis of risks and develop strategies for the sector, based on climate-change projections.

Biodiversity

97. 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.

98. 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.

99. 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.

100. 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.

101. 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.

102. 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.

103. 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. PPCR-Samoa will help enhance the resilience of natural ecosystems, particularly through interventions at the community level.

Infrastructure

104. 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.

105. 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 must be extended to accommodate inland flooding and watershed management, particularly in light of their affect on coastal infrastructure and works.

106. 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.

107. 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.

108. 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. This will be a focus of PPCR-Samoa's interventions. 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.

Tourism

109. Tourism is a major economic sector in Samoa. Most tourism spots are located within coastal areas. The effects of climate change and climate variability have been widely acknowledged as both direct and indirect. Direct effects include the loss of beaches, inundation and degradation of coastal ecosystems, saline intrusion and damage to critical infrastructure. Indirect consequences include the diminished beauty of natural resources, for example bleached coral and destroyed forests. Tourism accounts for 25% of GDP. Climate risks to the sector are being addressed by several existing and planned NAPA projects. However, it should be noted that enhancing the climate resilience of the road between the international airport and Apia will have major benefits for tourism. In addition, many of the activities undertaken as part of implementing the CIM and other plans under PPCR-Samoa will be of benefit to tourism. This includes enhancing community resilience by improving livelihoods through development initiatives such as ecotourism.

Responding to Climate Change

110. **Estimated Costs of Adaptation.** The EACC Samoa country study estimated the costs of Samoa adapting to climate change by assuming a return period of 50 years. This means the costs are higher than if adaptation was based on the current threshold of 10 years. For the CSIRO scenario it was assumed that storms with a 50 year return period have peak wind speeds of 148 kph today and 192 kph in 2100. It is necessary to anticipate conditions to the end of the century to ensure that buildings and other infrastructure constructed in 2050 can cope with storms over an assumed economic life of 50 years.

111. The analysis applied a cost-benefit test to assess the appropriate timing of adaptation projects identified in the NAPA. Some of these projects – e.g. upgrading water systems - are cost effective development projects under current climate conditions. However, the study noted that large investments in the relocation of coastal infrastructure should only be implemented if and when the reduction in the expected value of storm damage exceeds the annualised costs. The analysis suggests that this type of adaptation may not be justified under the NCAR scenario before 2050

if a 50 year storm threshold is used. On the other hand, under the CSIRO scenario it would be sensible to make some, but not all, of the investments between 2025 and 2035.

112. The overall cost of adaptation is much higher under the CSIRO scenario than under the NCAR scenario. This is because the former implies a much greater increase in the severity of storms with a 50 year return period. Under this scenario the cost of adaptation would rise from USD 2.4 million per year in 2010-19 to USD 10.6 million per year in 2040-49. The main cost arises from looking forward to the end of the century in setting the design standards for buildings and infrastructure constructed in the 2030s and 2040s.

113. One of the key lessons from the EACC Samoan country study is that extreme weather variability in the coastal zone will lead to large costs, whether they be in the form of hard coastal protection measures and continued road (and other infrastructure) replacement, or the costs associated with relocation. The study concluded that, in the longer term, relocation of certain assets, and whole villages in some cases, must be seen as the most sustainable longer-term option as it has the potential to pull economic activity, such as tourism, agriculture and other village-based enterprises away from the coast. Relocation of key infrastructure as an option for the most at risk villages should be seriously considered as part of the implementation phase of the CIM plans.

114. The EACC Samoan country study concluded that the priority adaptation needs for Samoa include the following:

- Revision of the NAPA, which takes into account changing climate science considerations, and a review of sectors with a move to give energy a higher priority;
- Development of a multi-criteria assessment tool to assist in the prioritisation of adaptation measures within and between sectors; this could be in addition to or in conjunction with the multi objective optimisation method being developed as part of the World Bank study;
- CIM plan implementation, including a review of the currency of CIM plans, prioritisation of actions within CIM plans and developing a programme for undertaking the various actions; relocation of key assets out of hazard zones should possibly be considered in the longer-term;
- Tackling the challenge of developing statutory and non-statutory plans, or other policy approaches, which address land use on customary land; and
- Investing in information management and analysis, including better-integrated and more robust data storage and retrieval systems; this includes a property-based land information system.

Section 3

Institutional Framework

The Public Sector

115. More sectors and components of the Samoan economy and society are recognising the need to enhance resilience to climate change. In addition, there has been some discussion about climate change being given a higher institutional profile in government. An institutional assessment is being undertaken as part of Phase 1. It will help ensure that institutional arrangements are optimised in terms of both addressing needs and reflecting capacities. Work related to this output will complement the MNRE evaluation of meteorological services, climate change and the Disaster Management Office, leading to their strengthening and the possibility of climate change being upgraded to a Division within the Ministry. The activity is also assessing the implications related to a greater integration of disaster risk reduction and climate change adaptation.

116. Samoa is very efficient in coordinating and managing climate change response activities, including administering a large amount of external assistance. Many 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 National 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 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.

117. The National Climate Change Country Team (NCCCT), which was established in 1995, 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.

118. 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 of 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.

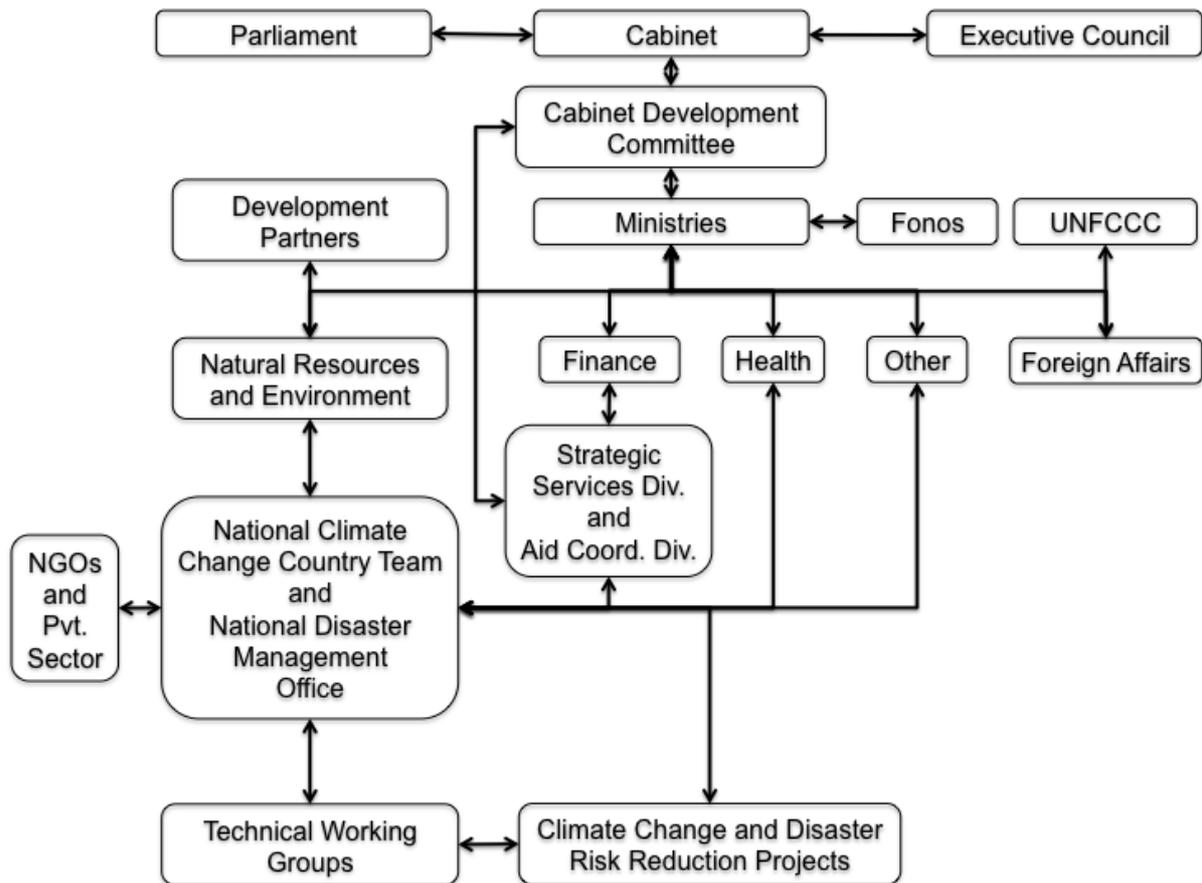


Figure 2. Institutional arrangements for climate change responses in Samoa.

119. 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 Ministry 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 activities. Implementation is carried out by relevant ministries. The MNRE also plays a major role in developing strategies, policies and coordinating adaptation measures. Other key Government agencies include the Ministry of Health, the Ministry of Agriculture and Fisheries, the Samoa Water Authority (SWA), Ministry of Works and Infrastructure (MWI) and the Electric Power Corporation (EPC).

120. The approval process for adaptation projects is shown in Figure 3.

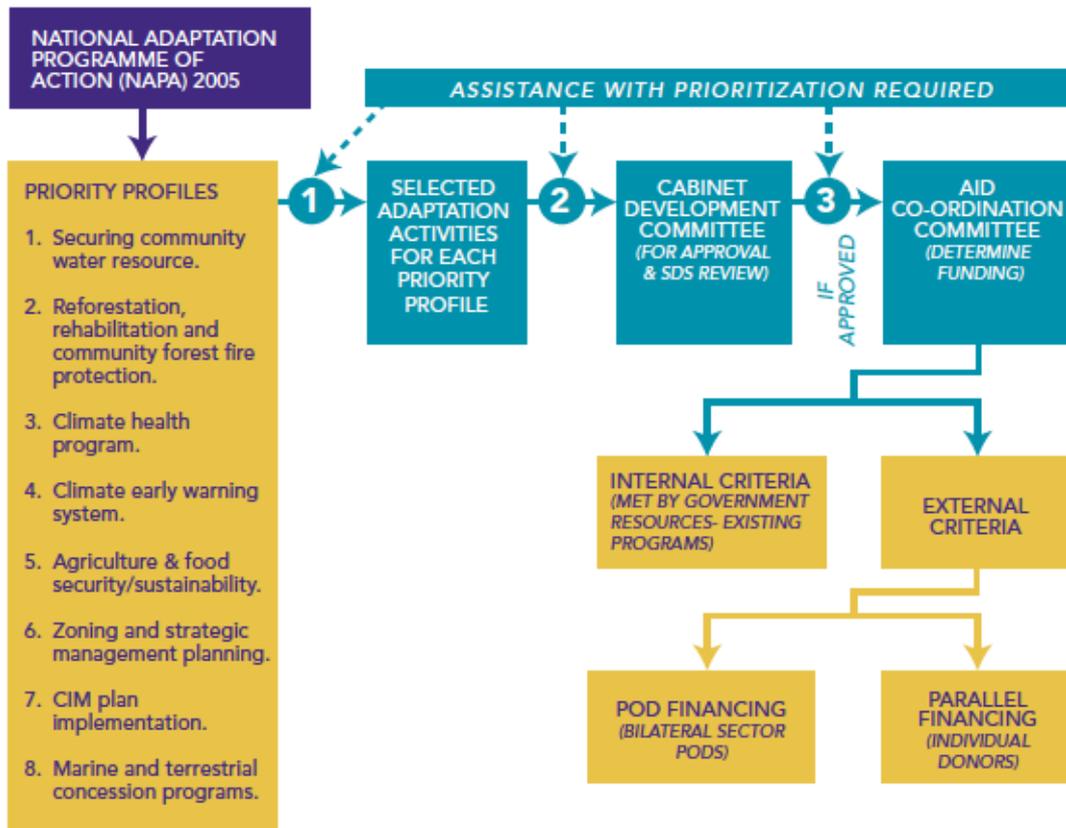


Figure 3. Approval process for adaptation projects. Source: The World Bank Group, 2010.

121. Coordination of PPCR implementation, as well as monitoring and evaluation, is the responsibility of the PPCR Steering Committee. This is a high level inter-ministerial body that ensures inter-sectoral coordination, whereas the NCCCT described above has technical working-level coordination responsibilities. The Climate Resilience Investment Coordination Unit (CRICU), based in the MoF, serves as the secretariat of the Steering Committee (Figure 4). This coordination arrangement will continue throughout implementation of the CRIP and include oversight of all climate change adaptation activities in Samoa (see Section 5 below).

122. The CRICU, based in the MoF, will also serve as the PPCR Phase 1 Project Management Unit (PMU). The structure of the CRICU is shown in Figure 5. As a Phase 1 activity, PPCR is supporting the establishment and operation of the CRICU. The existing resources in the Energy Unit of the MoF will assist CRICU, as required. CRICU will undertake specific project management tasks as instructed by the CRIP Programme Manager, on advice of the PPCR Steering Committee.

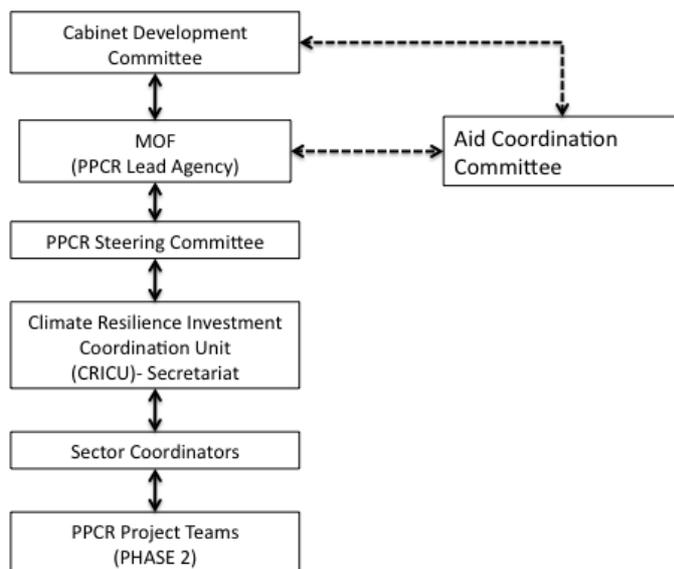


Figure 4. Arrangements for coordinating implementation of Samoa’s PPCR, including monitoring and evaluation.

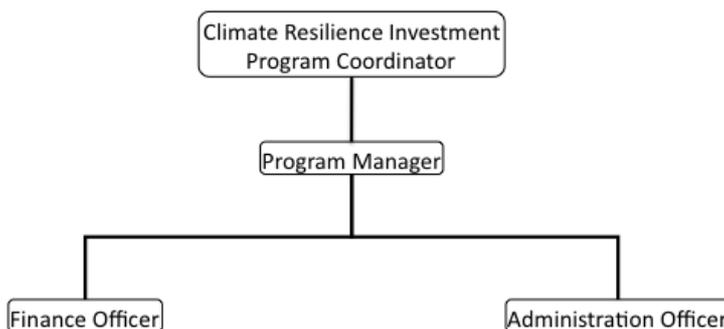


Figure 5. Structure of the Climate Resilience Investment Coordination Unit (CRICU), Ministry of Finance.

Civil Society Role in the Climate Change Agenda

123. 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, 0 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.

124. 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, UNDP funds community-based adaptation projects 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 society⁶. 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.

125. A key activity in Phase 1 is assessing and addressing the social aspects of climate change. This activity is considering how best to optimise and facilitate the involvement of all non-government stakeholders in enhancing resilience to climate change, including the participation of communities, community-based and non-governmental organizations and the private sector. One focus is on community-based adaptation through identifying opportunities for furthering and up-scaling ongoing community-based adaptation initiatives, community demonstrations of NAPA sectoral adaptation projects, and integrating adaptation into community-based development programmes, such as UNDP's Community-Centred Sustainable Development Programme, which is currently in a pilot phase.

126. A draft strategy to engage civil society, including the private sector, in building climate resilience in Samoa, which will build on the analysis during Phase 1, is presented in Annex 3 and specific proposals for their participation in project implementation are described in Part 2 below.

⁶ To date, both AusAID and the European Union have committed resources to this initiative.

The Private Sector

127. As has already been highlighted, civil society, including the private sector, are expected to play key roles in addressing climate risks. Consultations undertaken in preparing the PPCR Phase 1 proposals and the CRIP revealed that, given both the country's high vulnerability to weather extremes and recent experiences, there is general awareness of the risks from extreme weather related events such as cyclones and some association of these with climate change. Yet the private sector plays a limited role in directly addressing climate risks. This is due, in part, to limited knowledge and awareness, as well as low technical and financial capacity to extend beyond their primary business focus. Tourism, for example, is one of the most vulnerable sectors. However, the private owners of resorts have taken limited action to increase the resilience of their businesses. There is some experience, though, in the construction sector, where contractors employed under the SIAM projects and the Post-Tsunami Reconstruction Project have been engaged in the rehabilitation of damaged infrastructure. Designs now take into account climate related hazards such as increased flooding, landslides and storm surges. During the Second Joint Mission, the Society of Engineers, for example, realised the potential for participation in the PPCR and expressed strong interest in learning more about, and contributing to, the program. Specific activities to be implemented by the private sector are discussed in Section 3 below.

Gender and Climate Change in Samoa

128. Samoa has made some progress in implementing the Beijing Platform for Action passed at the Fourth World Conference on Women as well as MDG 3. However, much work remains to be done in order to ensure that the developments for women in relation to climate change are promoted, sustained and will continue. This includes the need for a Strategic Policy Framework that is informed by gender statistic, and one that shall provide the direction for achieving gender equality in line with the SDS. Such a focus is intended to bridge the gap between policy and planning, as well as between planning and financing. It is recognised that this requires better monitoring and evaluation, and renewed and continues support from regional and international networks and development partners, in line with their mandates on enhancing gender equality. It also means increased support for gender sensitive awareness raising, improved understanding of gender differentiated impacts of climate change and stronger collaboration and partnerships across all sectors and at all levels, in order for Samoa to achieve its goals for the advancement of women. In this respect, the recently adopted Samoa's National Policy for Women defines the priority issues and the intended outcomes for women and girls in Samoa for the next five years.

129. PPCR-Samoa will build on the pioneering gender-sensitive approaches used during preparation of Samoa's NAPA. For example, this involved a community participatory approach that involved local communities and men and women at the grassroots level who are the most vulnerable to the impacts of climate change. Countrywide public consultations were held with the three main inter-related social groups, namely village council of chiefs, the untitled men, and the women's committees and/or women's council.⁷

130. Formulation and implementation of Samoa's PPCR has also used all opportunities to ensure the equitable involvement of women and men. For example, every effort was made to ensure that women were adequately represented in both individual and general meetings with stakeholders, including meeting with women's organizations. In addition, the CRIP includes specific activities to ensure that the PPCR-Samoa outcomes will provide equitable benefits for women, men, girls and boys. Further gender considerations and promotion of women's participation in national climate change adaptation institutional frameworks and in implementation of adaptation will be included in implementation of the CRIP, based on the findings of the technical assistance to determine the gender-differentiated impacts of climate change in Samoa, and preparing a gender-mainstreaming framework and guidance for implementing gender-aware adaptation measures in PPCR-Samoa, especially at community level. This work will be undertaken early in the implementation of the CRIP, making the results available for the design and implementation of Investment Project 2, and hence the findings will inform activities on the ground.

131. A key aspect of the Phase 1 activity on the social aspects of climate change, which was described above, is assessing and integrating gender considerations and promotion of women's participation in national climate change adaptation institutional frameworks and in implementation of adaptation.

⁷ Further details are provided in Annex E of Samoa's NAPA.

Section 4

Overview of Samoa's Climate Change Related Policies and Activities

Policies, Plans and Strategies

132. Figure 6 provides a timeline for relevant Government of Samoa Reports. 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.

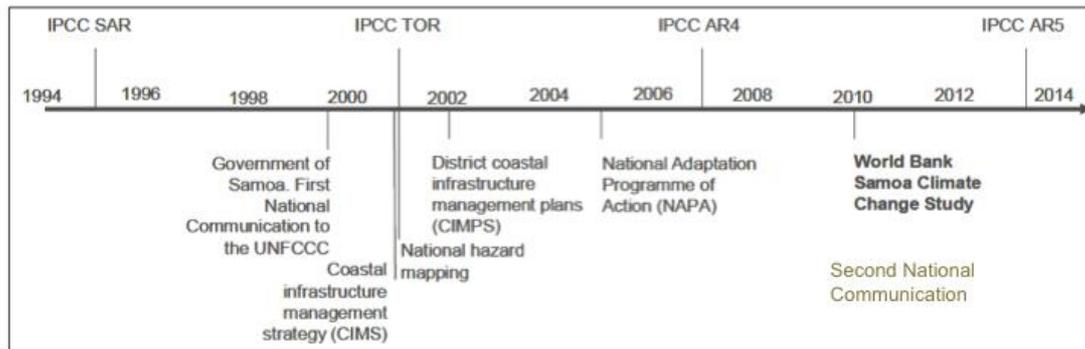


Figure 6. Timeline of relevant Government of Samoa and IPCC reports. Source: Adapted from Beca International, 2010b.

133. 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. It identifies climate change adaptation as a cross cutting issue alongside environmental sustainability.

134. The links between the SDS and the NAPA, including reporting relationships, are shown in Figure 7.

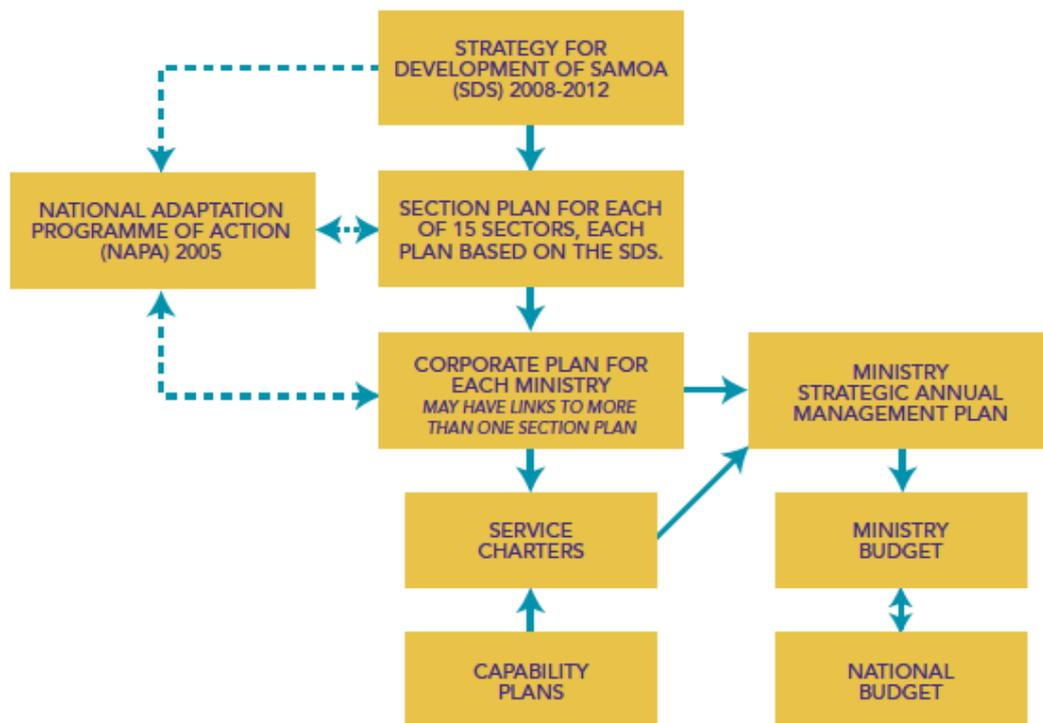


Figure 7. Links between the Strategy for the Development of Samoa (2008-2012) and the NAPA. Source: The World Bank Group, 2010.

135. 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.

136. While many sector ministries are still struggling with the concept of integrating climate change considerations in their plans and operations, the Ministry of Natural Resources and Environment (MNRE) has taken the lead in mainstreaming climate change (adaptation and mitigation) in its own planning, work programmes and budgetary process.

More information is provided in Annex 4.

Economic and Development Planning Frameworks

137. As part of the economic and financial reforms, and especially the institutional strengthening programmes, which started in the mid- 1990s⁸, the Government of Samoa established a straight forward and streamlined institutional framework for preparing and implementing economic development strategies. This framework has four major components – (i) the over-arching SDS; (ii) sector planning; (iii) project planning; and (iv) performance budgeting. Figure 8 demonstrates the cycle of economic and development planning and implementation, and the relationships between the four components. It is important to note that, with commitment and careful analysis, opportunities can be identified and utilised to incorporate national environmental concerns, including climate change considerations, into these main components of the economic planning and development cycle or process. Sector planning varies in duration, with the minimum cycle being every five years.

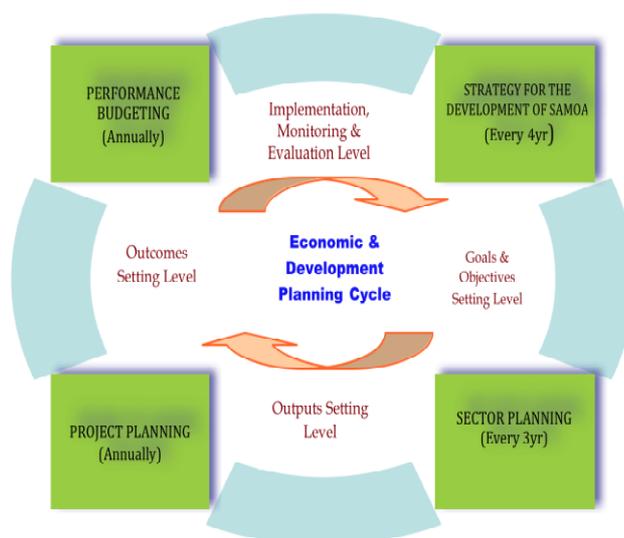


Figure 8. Samoa's economic and development planning cycle.

⁸ Government of Samoa, National Report to the World Summit on Sustainable Development 2002, p.13 discusses in more detail the various reforms the government undertook to improve the performance of its public sector and create opportunities for the growth of its private sector and development of the wider community.

Section 5

Identifying the Priority Focus for PPCR-Samoa

138. The priorities identified in the EACC Samoan case study, including those identified in the discussion of sector vulnerabilities, must be considered in light of the climate risk management activities already being undertaken by Samoa and its development partners (see Annex 5). For example, rather than revising the NAPA, a national adaptation programme will form part of the National Climate Change Programme and Plan that is being prepared under Phase 1 of PPCR-Samoa. The following paragraph describes some of these activities which are already underway in sectors such as agriculture, water, health and tourism, which could be built upon by the PPCR.

139. The UNDP-supported Sustainable Community Development Programme is piloting CIM plan implementation in four of 43 districts for which CIM plans were prepared under the World Bank-supported SIAM project. This effort could be scaled-up. The Community Based Adaptation Project (CBA), which is supported by the GEF (SPA) and AusAid, aims to increase resilience of natural resources and livelihoods sensitive to climate change. The recently approved Adaptation in the Forestry Sector Project, supported by GEF (LDCF), AusAid and JICA, will integrate climate risks and resilience into lowland agro-forestry and upland forestry policies and strategies and demonstrate techniques for climate resilience. The Agriculture and Health Project (GEF-LDCF) is improving the organization and technical capacity in the Samoa Meteorological Division to monitor climate change trends and provide timely climate risk and early warning information for extension workers and public health staff, as well as strengthen their capacity. The Regional Pacific Adaptation to Climate Change Project (GEF-SCCF) is developing guidelines for Samoa to incorporate climate resilience into integrated coastal management model and demonstrating climate risk reduction.

140. This ongoing work represents considerable effort but is largely focused on technical assistance to strengthen capacity, enhance policies and strategies, to demonstrate climate resilient techniques and is often geographically focused. The PPCR will adopt a strategic focus on the coastal zone where 70% of the population resides, the main economic infrastructure is located and climate risks have to be addressed on an inter-sectoral basis. It would cover at least 16 of the 43 Districts in Samoa. The investments to be supported would directly affect four of the priority sectors/themes identified in the NAPA, namely infrastructure, fisheries, biodiversity and tourism but would also impact on the water and agriculture sectors. It would contribute to mainstreaming climate resilience in Samoa's development, including scaling up existing good adaptation practices being developed through some of the

projects mentioned above. Moreover, stakeholders recognised the importance of undertaking a major effort to enhance the climate resilience of economically and socially important infrastructure as well as taking a ridge-to-reef, ecosystem-based approach to enhancing the climate resilience of coastal resources and communities through, in part, implementation of district CIM plans. This is again consistent with the findings of the EACC Samoa Country case study. Thus, Samoa's CRIP will comprise two investment projects: (a) Investment Project 1 –Enhancing the Climate Resilience of the West Coast Road (Apia to Airport); and (b) Investment Project 2 – Enhancing the climate resilience of coastal resources and communities. It would also include the establishment of a climate change adaptation trust fund.

141. Under the second phase of the SIAM project, 5 km of road have been upgraded but not up to climate resilient standard. This road forms the start of the West Coast road that connects Apia to the international airport. This road is a vital link which is already being compromised by a high water table (leading to deterioration of the road bed), high rainfall events (leading to surface flooding and further deterioration of the road surface) and extreme high sea levels (leading to accelerated erosion of the road bed). The upgrade of this part of the Samoa economic corridor is identified as a priority investment in the Samoa Infrastructure Investment Plan. Investment Project 1 will scale up this effort by upgrading 26 km of road between Apia and the airport to climate resilient standard. The experience gained will be used to ensure success in addressing an important gap in Samoa's ability to respond to the serious consequences of climate change.

142. During the scoping and preparation of this CRIP several stakeholders questioned whether it would be more appropriate for Investment Project 1 to focus on constructing an inland road that would be less at risk to climate change. This option has been considered by Samoa's Land Transport Authority, including determining the costs. Government has decided not to proceed with the inland option in the immediate term, due in part to an unfavourable cost-benefit analysis and the time it would take to acquire the land required for the road. This is consistent with the findings of the EACC Samoa country study. While the Government has recognised that the inland route will be required in the longer term, the current road will remain important as not only the main access to the airport in the medium term, but also to the coastal communities along that route in the longer term. However, it is highly probable that this road will be subject to damaging climate events in the medium term and possibly to more frequent extreme events than in the past. The longer-term decision on road patterns, and similar priorities, will be reflected in the National Climate Change Programme and Plan being prepared as a Phase 1 activity of the PPCR. Future decisions will also be guided by the findings of the proposed technical assistance to assess the climate vulnerability of Samoa's primary road network.

143. Investment Project 2 will draw on the experience particularly of the CBA and PACC projects under the UNDP-supported programme mentioned in paragraph 139 above and other community based adaptation experiences, and scale up the effort to implement the CIM and other plans for at least 16 priority districts, using an ecosystem based approach. An example of a CIM plan is provided in Annex 6, while Table 3 gives examples of “soft” and infrastructure-related interventions designed to enhance climate resilience that are included in the CIM plans.

Table 3

**Examples of Proposed Climate Resilience Building Interventions
Found in Samoa’s CIM Plans**

“Soft” Interventions	Infrastructure-related Interventions
Plant suitable species of trees or other vegetation in the coastal areas.	Improve culverts and drainage ditches to reduce flooding
Identify a sustainable source for domestic sand in the vicinity to allow beach replenishment at critical locations to protect the local coastal road and infrastructure against inundation and coastal erosion	Construct a boat slipway for village boats for access across the seawall so village livelihood activities, including ecotourism, can be maintained
Alternative development areas to be identified for villages where development pressure is resulting in encroachment on wetland areas	Relocate houses and other structures outside or set back from the coastal hazard zone when buildings require replacement
Incorporate the Catchment Management Plan into a Sustainable Management Plan for the existing and future Land-use activities in the District	Investigate reliable water supply for the village
Government and villages to manage reclamation processes affecting inland wetlands as well as along the coast	Improve the inland river crossing and improve the alignment of the inland access to provide an alternative route in the event that the coastal road is impassable
Village councils to regulate the clearing of lands around wetlands and initiate replanting programmes for coastal areas	Provide underground electricity and telephone lines and relocate electricity lines outside hazard zones in the long term
Village and Government management of clearing inland catchment areas close to rivers and streams to reduce sedimentation of estuaries, wetlands and the lagoon	Install water tanks as an alternative when water supply is cut off, and for families with no current access to water supply
Undertake a local education programme on the importance of maintaining drains and discourage dumping rubbish into the river	Build foundations at a level that takes into account the flooding hazard at the site
Encourage the replanting of mangroves in areas currently eroding and provide protection of these areas from domestic animals	Extend the end of the existing seawall approximately 50 metres to allow for a better tie-in to the coast and back-fill eroded area to increase buffer to road

144. Supporting technical assistance, to be provided mostly during project preparation, will develop a practical planning and implementation framework that builds on existing plans to manage climate-related risks and facilitates a ridge-to-reef, ecosystem-based approach to adaptation. The framework will provide the foundation for the development of statutory and non-statutory plans, or other policy approaches, which address land use on customary land. This represents a significant transformational change.

145. Importantly, design of the two Investment Projects has ensured that there are strong linkages and synergies between these and the projects being implemented under the NAPA (Table 4).

Table 4

Linkages between the PPCR Investment Projects and Selected NAPA and other Projects

PPCR-Samoa Investment Project	NAPA and Related Projects	Status
Climate resilient road	SIAM- 2 (Additional Financing): Upgrade of Vaitele Road	World Bank – Under Implementation
Enhanced climate resilience of coastal resources and communities	SIAM 1 and 2: Preparation of CIM plans	World Bank – Implemented/ under implementation
	Post-tsunami Reconstruction Project	World Bank – Implemented/ under implementation
	EU budget support, with focus on water sector	EU - Ongoing
	NAPA 1 - Climate Early Warning and Information System, Agriculture and Health (GEF-LDCF)	UNDP - Under Implementation
	NAPA 2 – Coastal adaptation (GEF-SCCF, PACC , with SPREP) – hard and soft solutions	UNDP - Under Implementation
	NAPA 3 – Adaptation in the Forestry Sector (GEF-LDCF, AusAid and JICA)	UNDP – Proposal Approved
	NAPA 4 Ground Water, Surface Water, Meteorology, Climate Change Services, Tourism and FESA (AusAid)	UNDP – Under Implementation
	NAPA 5 (GEF-LDCF) – Tourism Sector Adaptation– community beach fale operators	UNDP - Proposal Development
	Coastal Adaptation (Adaptation Fund) – MNRE – new initiative	Adaptation Fund - Proposal Development
	Sustainable Community Development Program	UNDP – Under Implementation
	Community Based Adaptation Project (AusAid, GEF-SPA)	UNDP - Under Implementation
	Tsunami Early Recovery Project	UNDP - Under Implementation
	Sustainable Landuse Management (GEF-Trust Fund)	UNDP - Under Implementation
	Land Degradation/Restoration	UNDP – Under Preparation

Scope of PPCR Support

146. 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. This is an important initiative in itself. For example Samoa's National Capacity Self Assessment found a limited capacity of relevant sectors and stakeholders to implement adaptation strategies. Given the magnitude of the task to build such capacity, this PPCR activity will continue into Phase 2. Enhancing the capacity for climate resilient development meets a key prerequisite for undertaking public and private sector investments identified in Samoa's national and sectoral development plans and strategies and addressing climate resilience. This is a substantial task given the extreme nature of the climate-related risks faced by Samoa, and its high vulnerability. At the time the NAPA was prepared the nine urgent and immediate projects alone were estimated to cost nearly USD 8 million. By 2011 the cost of more comprehensive interventions under the NAPA were estimated by Government to be USD 2 billion.

147. Clearly the requested PPCR funding of USD 25 million will go only part way to meeting Samoa's adaptation costs. Nevertheless, it represents a critical contribution for two very important reasons: (i) the funds will be used to pilot interventions that represent scaled-up action and deliver transformational change in how climate-related risks are managed in Samoa, and indeed in the Pacific; the resulting best practices and lessons learned will be invaluable in addressing the remainder of Samoa's adaptation needs, as well as the adaptation needs of other countries in the region and more widely; and (ii) PPCR-Samoa is taking a longer-term, programmatic approach which includes integrating considerations of climate resilience in national development planning and implementation in ways that are consistent with the national poverty reduction and sustainable development goals. Thus the mechanisms and resources mobilised by the PPCR represent a major opportunity for Samoa to address its challenges of low adaptive capacity, as well as the high levels of climate-related risks and associated vulnerabilities. Climate risk and resilience considerations will become a key and integral part of core development activities so that the viability of investments will not be compromised by climate change. A good example of this significant shift will be the investment in making the Apia – Airport road more climate resilient.

148. By supporting the establishment of a Climate Change Adaptation Trust Fund, the PPCR will assist with enhancing the Government's capacity to meet its fiduciary responsibility to oversee the large climate-related investments being made in Samoa. These are likely to grow substantially in the coming years, highlighting the need to manage the funds in a comprehensive, coordinated and responsible manner within the

broader context of sustainable development and poverty. The PPCR also represents an opportunity to move from a project- to a programmatic based approach, not only with respect to planning and implementation but also with regard to financing. This aligns PPCR with the shift in approach by Government. The technical assistance related to establishing a sustainable financing mechanism for adaptation is an important and timely initiative made possible by the PPCR.

149. Design of Samoa's CRIP has been driven by four overarching themes related to the PPCR's priorities of scaling up and transformative impact. These are: (i) enhancing institutional capacity for mainstreaming climate resilience in planning and budgeting processes of key national ministries; (ii) identifying and utilising key entry points for mainstreaming climate change considerations in national and sub-national planning and budgeting processes; (iii) strengthening civil society and private sector engagement and gender considerations in climate change adaptation; and (iv) enhancing the flow of policy-relevant climate change information consistent with local capacities and capabilities.

150. **Entry Points.** The SDS, the 14 sector plans including the Infrastructure sector plan, the National Policy to Combat Climate Change, the NAPA, the Planning and Urban Management Act, the Disaster and Emergency Management Act, the National Disaster Management Plan, the Coastal Infrastructure Management Strategy and Plans offer effective entry points for mainstreaming of climate change risks and adaptation strategies at national level. As noted earlier, the current SDS includes some consideration of climate change adaptation. The National Disaster Management Plan has identified many links to climate change adaptation.

151. It is desirable to adopt a ridge-to-reef and integrated watershed management approaches when building resilience of human and natural systems, especially in the small island context. Ecosystem- and community-based adaptation are thus key for inland as well as coastal areas. Samoa is already implementing or planning adaptation projects that focus on upland areas. An example is the NAPA-GEF-LDC forestry adaptation project. This uses both ecosystem- and community-based adaptation approaches for lowland agro-forestry and upland native forestry areas. PPCR initiatives will thus focus on the coastal sector while building linkages and achieving synergies with adaptation projects in inland areas as well as in key development sectors and initiatives such as in agriculture, forestry, energy, health education and community development.

152. **Private sector participation.** It is envisaged that the private sector will play a key role in the implementation of the two main investment projects to be supported in Phase 2. Investment Project 1, which focuses on making the West Coast Apia to Airport road climate resilient, will be almost entirely implemented by private sector

contractors, for both design and construction. Existing design parameters will be raised to a higher standard to avoid deterioration of roads due to increasingly high water tables, enhancing runoff, and by avoiding surface flooding and erosion. Existing local experience will be supplemented by international technology transfer through the participation of international firms, which will help raise the capability of local contractors to address climate risks. This will help ensure that local businesses are themselves robust to extreme events, especially those businesses that will be needed for rapid responses that minimise damage and undertake repairs immediately after an extreme weather event.

153. Private sector contractors will also be heavily involved in implementing activities in Investment Project 2 related to increasing the climate resilience of district and village level infrastructure such as access roads. Other priority needs identified in CIM plans, such as the supply of clean water, could involve the provision of water purification and treatment technologies and water storage facilities, thereby providing further opportunities for private sector participation.

154. Another entry point for private sector participation in the PPCR, and beyond, will be through the awareness raising activities. As mentioned above, limited awareness is one of the barriers preventing the private sector from seizing opportunities for greater participation in climate change adaptation. This will be addressed through the activities in Investment Project 2 designed to build capacity through awareness-raising and other initiatives among civil society actors, including targeted information dissemination to key private sector decision makers.

155. **Engagement of civil society organizations.** Multi-stakeholder consultations have been a major element of the preparation of the CRIP for Samoa, and will remain a critical part of the design and implementation as both of the investment projects will require further extensive consultations with local communities, community-based organizations, and broader civil society. Investment Project 1 will engage with communities through village-based consultations, and Investment Project 2 will involve a participatory process of identification of the priority interventions and the ways in which they should be addressed by communities themselves.

156. It is envisaged that PPCR-Samoa's capacity building support would be twofold – targeting civil society organizations and local communities. While much has been achieved in terms of raising awareness of communities and the general public about climate change challenges in Samoa, the need for further capacity building of civil society actors in this context has emerged as a priority during the consultations with various stakeholders in preparation of the PPCR-Samoa Phase II.

157. Non-governmental and community-based organizations will therefore be involved in assisting the communities in approximately 16 districts to carry out the activities aimed at enhancing their climate resilience. These are likely to include activities related to improving livelihoods, such as building the climate resilience of aquaculture, agriculture, and tourism activities. The second investment project will also aim to empower local communities by building their capacity to assess their own needs, discuss these with the government, and implement and supervise the construction of infrastructure and other activities under PPCR. As part of project preparation, technical assistance will be provided to assess specific capacity building needs of civil society organizations, which would then be addressed under the component providing the support to civil society as part of the second investment project.

Benefiting from the Samoa - PPCR Partnership

158. Partnership benefits are not just about inflows of financial resources. Sharing knowledge is also critically important and is the principal reason for the Pacific regional component of the PPCR. Preparation of this CRIP has benefitted considerably from the comments the PPCR-SC provided on the proposal for Phase 1 funding. Specific responses to these comments have been presented to the PPCR-SC through a separate communication. The PPCR-SC provides extensive guidance on monitoring and evaluation.

Linkages with the Regional Track of the Pacific PPCR Pilot⁹

159. The CRIP would be supported by activities to be implemented under the Regional track of the Pacific PPCR Pilot. The main rationale for a regional track is that individual countries and the region as a whole are highly vulnerable to climate change and face a number of barriers in addressing their climate risks, which they have found difficult to overcome acting independently. These include: lack of access to financial resources and innovative financial instruments; limited in-country capacity to assess and respond to climate change impacts; weak institutional arrangements for mainstreaming attention to climate change into development plans and policies; and poor understanding of explicit climate hazard risks affecting decision-making.

160. The Regional track of the PPCR will support the individual countries to build capacity for mainstreaming climate change adaptation and disaster risk management into development. PPCR resources would help in removing many of the barriers for

⁹ Proposals described here are in draft and not yet endorsed, but they have emerged from extensive consultations in the region during the past year. US\$10 million have been set aside for the Regional Track

addressing climate risk management in the region and assist the countries in implementing the priority adaptation measures that they have identified. These would include: (i) promoting the transfer of lessons and maximising synergies across countries through knowledge platforms, including, where appropriate, through thematic approaches, that would be unavailable to countries working separately; (ii) providing regionally based technical assistance in specialised areas, including facilitating access to climate financing, to overcome the lack of such skills in individual countries; (iii) providing technical assistance to encourage replication and scale-up of successful activities; (iv) introducing innovative financial and partnership mechanisms involving the private sector, NGOs and donor partners; and (v) working with, and strengthening, regional organizations, particularly with a view to promoting cross-learning.

161. The Regional track will benefit all Pacific Island countries and work closely and collaboratively with the agencies that form part of the Council of Regional Organizations in the Pacific (CROP). The regional overlay will promote replication and up-scaling of good practices, leveraging investments, as well as monitoring and dissemination of lessons learned. It would support the overall PPCR goal of helping countries to integrate climate resilience into development planning, processes and implementation. Based on PPCR guidelines, the region-wide activities component will focus on those activities that are of greatest relevance to the region and which are best implemented on a regional basis, provide technical support in the form of advice and information, training, regional monitoring, coordination of regional workshops and the facilitation of the sharing of lessons among Pacific countries. For Samoa, responsibility for operationalizing the link with the Regional Track would rest with the CRICU.

162. **The three main components**wouldcomprise:

- a. Providing expertise to support counties in mainstreaming climate change adaptation into national development policies and plans, including the capture and analysis of required data (a country profile for Samoa has already been developed as an example of how the mainstreaming effort can be supported) ;
- b. Identify and implement practical climate change adaptation knowledge and experience for immediate piloting (such as from the many existing projects in the region including the PPCR) and for longer-term replication and scaling up in key development sectors;
- c. Build and support Pacific Island countries capacity to access and manage climate change resources in line with Forum Leaders directives and guidance, and the Pacific Islands Framework for Action on Climate Change, with a particular focus on a possible regional financing/technical support mechanism.

163. The SPCR in Samoa would be clearly linked with and supported by each of the components of the regional track. Already, a country climate profile for Samoa, which will be a useful tool for policy makers and other stakeholders, has been developed as an example of the potential outputs from Component 1. There is a need in Samoa to strengthen national data management for climate change which would be supported under Component 1. Good practices already developed in Samoa, such as preparation of CIM Plans, could be replicated elsewhere in the region, while Samoa would benefit from practices successfully implemented in other countries which could be piloted through the Regional Component. The proposed establishment of a climate change adaptation trust fund in Samoa would clearly benefit from close synergy with the activities under Component 3 above.

164. Figure 9 illustrates the linkages between the activities which will be undertaken regionally and in Samoa.

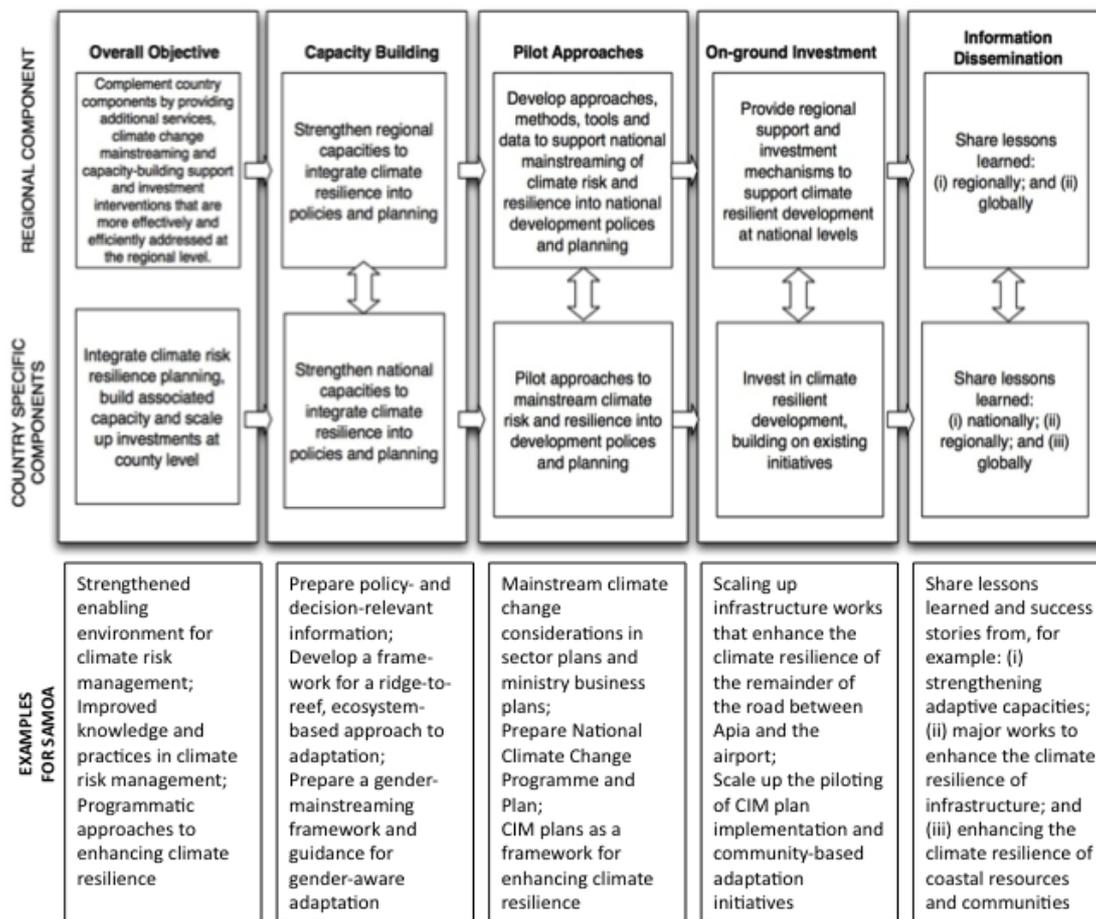


Figure 9. Examples of the linkages between PPCR activities undertaken regionally and in Samoa.

PART 2
PROPOSED INVESTMENT PROGRAMME
COMPONENTS FOR PPCR FINANCE

Section 1

Overview

165. Figure 10 provides an overview of PPCR-Samoa, including both the Phase 1 and Phase 2 activities. The strengthened capacity that results from Phase 1 activities will provide an excellent foundation for the scaling up and transformational change which occurs in Phase 2. Importantly, in both Phases lessons learned and success stories will be captured and shared, largely but not exclusively through the PPCR regional component.

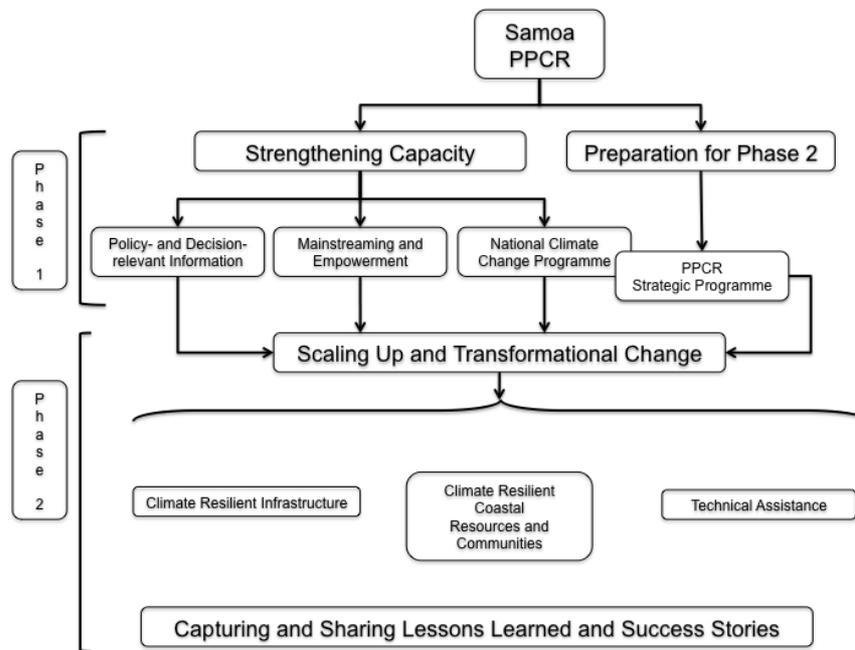


Figure 10. Overview of the two phases of PPCR-Samoa.

166. The proposed Phase 2 investment programme, with the associated consultations, capacity building, complementary technical assistance and participation of civil society, including the private sector, is shown in Figure 11. The activities framework is shown in Figure 12. Importantly, this figure shows how Investment Project 1 is embedded within the wider framework of activities which will be conducted under Investment Project 2.

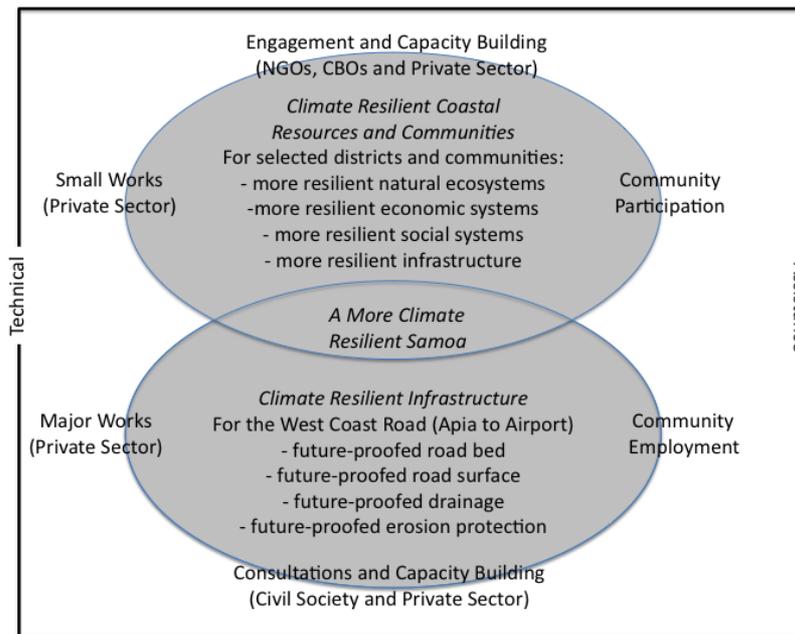


Figure 11. Details of the Phase 2 investment programme, with the associated consultations, capacity building, complementary technical assistance and participation of civil society, including the private sector.

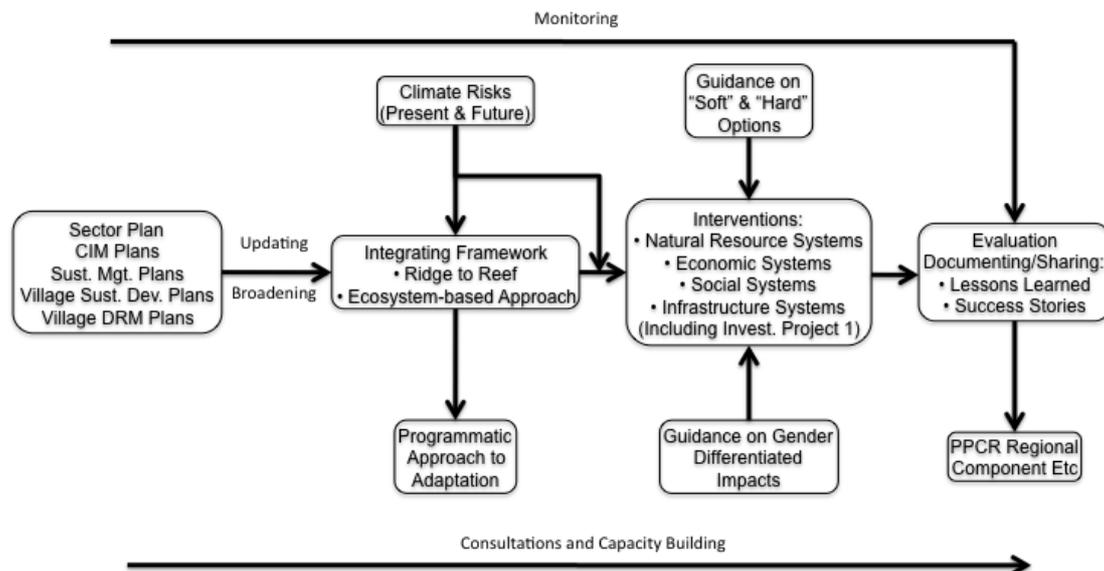


Figure 12. Framework for Phase 2 activities, including showing how the Investment Project 1 (climate resilient infrastructure) is embedded within the wider framework of activities that will be conducted under Investment Project 2.

Section 2

Investment Project 1

Enhancing the Climate Resilience of West Coast Road, Samoa, between Vailoa and Mulifanua Wharf

Background

167. The West Coast Road is a key infrastructure component of the Samoa Economic Corridor. It provides a vital land transport link between: Samoa's capital city Apia and, to the west, Samoa's key international airport Faleolo and, further to the west, the Mulifanua inter-island ferry wharf, which is the main gateway to Samoa's second important island, Savai'i.

168. The road runs parallel –and occasionally adjacent-- to the coast. It is vulnerable to high rainfall events (leading to surface flooding and deterioration of the road surface) and extreme high sea levels (leading to accelerated erosion of the road profile). In addition, the road surface is compromised, particularly at its eastern end, by a high water table (leading to deterioration of the road pavement).

169. Under the World Bank-funded Samoa Infrastructure Asset Management project II (SIAM), technical assistance was provided for a detailed feasibility study to assess, evaluate and upgrade the drainage of the West Coast Road and increase its resilience to extreme weather events. Upgrading of the West Coast Road drainage and surface reinforcements along its 30km length is identified as a priority in the Samoa Infrastructure Investment Plan, which is currently under preparation.

Development Objectives

170. The project development objectives are to: (i) provide a climate resilient West Coast Road; and (ii) prepare a climate resilience enhancement programme for the overall road network of Samoa.

Anticipated Components and Activities

171. Rehabilitation of the road to increase its resilience to climate change will include:

- *Raising and strengthening the road pavement* – to avoid deterioration due to increasingly high water tables;
- *Strengthening the road surface* – improving resistance to traffic wear and tear, and enhancing runoff, thereby reducing deterioration;
- *Improving longitudinal and cross-drainage* – to avoid surface flooding which contributes to road deterioration;
- *Improving protection of road profile* – to avoid erosion of road works during extreme high sea levels;
- Technical Assistance for consulting services related to detailed design and construction supervision; and
- Technical Assistance for consulting services to prepare an infrastructure vulnerability assessment and climate resilience enhancement improvement programme for the overall road network of Samoa (see Section 2).

172. The condition of the existing road carriageway, shoulders and drainage, hence the extent of rehabilitation required, vary considerably along the length of the road. Based on a recent visual inspection and available data, the road could be considered in four linear sections as follows, starting at the eastern end (Table 5).

Table 5

Details of the Existing Road

Road Section	Length (km)	Setting	Surface Condition	Elevation (m AMSL)	Drainage	Traffic (vpd)
Vailoa – Faleula	5	Suburban	Poor / fair	1.5 - 5	Poor	>10,000
Faleula – Malua	6	Peri-urban	Poor/ fair / good	1.5 - 5	Poor / fair	>5,000
Malua - Faleolo (airport)	15	Peri-urban / rural	Good	1.5 - 5	Fair	<5,000
Faleolo - Mulifanua	4	Rural	Good	1.5 - 15	Fair	<1,000

173. As is clear from the above, the road condition generally improves from east to west, which relates strongly to its elevation, quality of drainage as well as traffic volumes.

174. The proposed intervention can be considered as three components, which will involve the following activities:

Road carriageway / pavement rehabilitation:

175. The existing carriageway is 2-lane, generally 7 metres wide, with a double seal bituminous surface in varying condition. The underlying pavement is understood to consist of crushed stone base course and sub-base layers of varying thickness. The

scope of rehabilitation work will depend on the detailed assessment of the road condition, but in principle the following interventions are proposed:

- Poor surface condition – overlay existing surface with new 150mm crushed stone base course on a geotextile fabric where appropriate, with a 50mm thick asphaltic concrete surface;
- Fair surface condition – overlay existing surface with a 50mm asphaltic concrete surface; and
- Good surface condition – patch any distressed areas and apply a single seal surface dressing.

Shoulder improvements:

176. The existing shoulders on either side of the carriageway vary in width, surface type and condition. As with the carriageway pavement above, the scope of interventions on shoulders will be based on detailed fieldwork and analysis, but for estimation purposes the project will provide uniform 1.5 meter wide bitumen surfaced shoulders on both sides of the road. This will be achieved by installing a 150mm crushed stone base course and a double seal bitumen surface throughout.

Drainage:

177. Under the current SIAM project a detailed study¹⁰ was undertaken to identify and assess the capacity and condition of existing road drainage components along the route, analyse the drainage requirements along the road, and prioritise interventions to significantly reduce flooding. The output of this study is bid documentation and drawings for two contract packages: one involving drainage interventions at 25 sites that require easements across adjacent properties, and one including drainage works at 26 sites where no easements are required. The proposed packages have been fully costed.

178. The drainage design and proposed drainage works will be reviewed hydrologically and hydraulically, taking climate change projections into account and in light of the proposed carriageway and shoulder improvements. Careful consideration will be given to improving the longitudinal drainage on both sides of the road. This did not form part of the study output above.

¹⁰West Coast Road Drainage Improvements (Contract B2.0201) – Beca International Consultants Ltd for LTA, Sept 2010

Anticipated Key Indicators and Baseline

179. The anticipated key indicators, baseline, and intended outcomes and impacts are described in Table 6.

Table 6

Anticipated Key Indicators, Baseline, and Intended Outcomes and Impacts

Component	Activities	Indicator(s)	Baseline*	Intended Outcome(s)	Intended Impact(s)
Carriageway rehabilitation	Raising existing pavement	Elevation of road centreline	[Point levels along route]	Increased surface water runoff	Reduced inundation / flooding
	Resurfacing	Surface roughness	Average IRI = 10	Improved trafficability	Improved transit quality for vehicles
		Reduced on-road routine & periodic maintenance	[Current annual maintenance contract cost]	Extended life of road asset	Reduced maintenance costs
Shoulder improvement	Reconstruction	Completed sealed shoulders	Zero (all shoulders currently unsealed)	Safe passage for pedestrian road users	Improved transit quality for pedestrians
		Accidents	[available records]	Reduced accidents	Safer transit for all road users
Cross drainage	Culvert installation	Flooding events causing traffic disruption	[available records]	Reduced flooding of road reserve	Minimal disruption to traffic due to flooding
	Outfalls to coast	Completed outfalls	Zero	Reduced flooding of adjacent properties	Reduced hazard to property

** Indicative only; a baseline study will be conducted prior to implementation of activities for this Investment Project*

Table 7

Estimated Cost of Investment Project 1

Cost Category	Estimated Cost (USD million)	PPCR (USD million)	GoS (USD million)
Works	15.3	13.0	2.3
Consulting Services (design and construction supervision)	1.5	1.5	
Consulting Services – Technical Assistance (vulnerability assessment)	0.5	0.5	
Consulting Services (drainage assessment and design improvements) ¹	0.3		0.3
TOTAL	17.6	15.0	2.6

¹ This assignment is now completed under the Second Infrastructure Asset Management project

Results and Performance Framework

180. The key results expected are:

- Increased resilience of the West Coast Road infrastructure to extreme weather effects;
- Improved transit conditions and journey times for all road users; and
- Reduced routine and periodic maintenance costs.

Investment Project 2

Enhancing the Climate Resilience of Coastal Resources and Communities

Background

181. In Samoa, 70% of the population is located in the coastal zone. Coastal ecosystems are heavily influenced by ocean forces, but are also linked through the hydrological system to processes that have their origins high up in the watersheds which drain into the coastal zone (Figure 12). Because these terrestrial and marine drivers influence the biological and physical properties of the coastal zone—its biodiversity, productivity, exposure, and resilience, it is essential to take into account these system processes in maintaining the essential services that contribute to human habitability and welfare in the coastal zone. These services are threatened by sea-level rise and storm surge, which will incrementally impact upon Samoa’s coastal zone through events such as flooding, coastal erosion and damage to coastal infrastructure including hospitals, schools, port facilities, power plants, airports, tourist infrastructure.

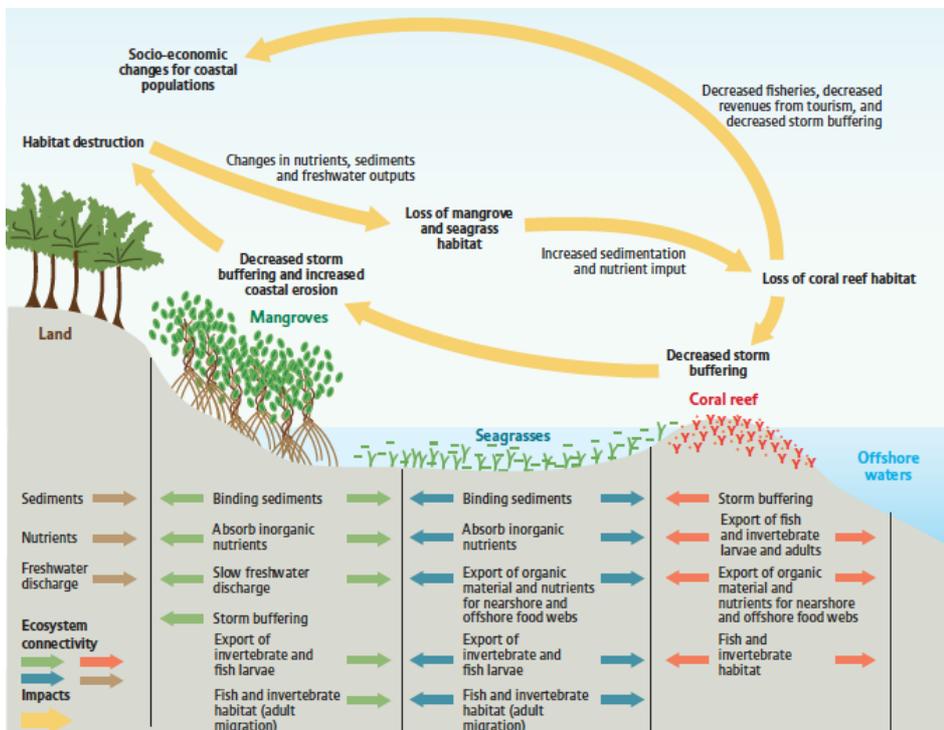


Figure 12. Diagram illustrating aspects of the ridge to reef approach.

182. To date in Samoa, the adaptation response to this exposure has comprised mainly of traditional engineering solutions centred on the construction of seawalls. However, these may work against nature when they are poorly planned and constructed or sited inappropriately. An essential element of any strategy for adaptation of coastal communities to climate change is enhancing the climate resilience of the natural ecosystems and resources on which coastal communities depend, i.e. the goods and services such as erosion control, storm protection and water filtration. Taking a broad ecosystem-based approach (including hard infrastructure as well as soft greener solutions) to adaptation planning and interventions is a logical approach, and one that is likely to be more cost-effective and sustainable in the long term than relying entirely on engineered solutions.

183. As mentioned earlier, CIM Plans have been prepared for all districts in Samoa, but given the length of time since preparation (some dating back to 2002) and limited scope in some instances (mostly hard infrastructure solutions), Government has taken a decision to review and update the Plans. It is proposed that this review be undertaken during project preparation. The CIM Plans would be reviewed and revised in the context of other existing planning frameworks such as Sustainable Management Plans (SMP), which are required under the Planning and Urban Management Act, Village Disaster Risk Management Plans (VDRMP) and Catchment Management Plans. In addition, it will be important to coordinate activities with the work already taking place in upland areas under the NAPA Implementation Projects to better manage watersheds where a number of the threats to coastal ecosystems originate.

184. Using an ecosystem-based approach, a ridge to reef strategy will be employed where PPCR investments would be focused on coastal areas and linked with the upper watershed activities already taking place under other projects.

Development Objectives

185. The project development objective is to reduce vulnerability to and enhance the capacity of natural systems and coastal communities to recover from impacts (chronic and acute) associated with Climate Change.

Anticipated Components and Activities

Component 1: Implement CIM Plans¹¹ to Manage Climate and Disaster Related Threats

186. The main focus of Component 1 will be on implementing revised CIM Plans in conjunction with other related planning frameworks such as SMPs and VDRMPs in at least 16 districts, the eight adjoining the Apia – Airport road, and eight others, based on the CIM Plan review to be undertaken during project preparation, in consultation with the affected communities. In the eight or more districts in other parts of the country (not adjoining the Apia – airport road), CIM plans would be selected based on vulnerability and cost effectiveness criteria being developed by the on-going prioritization exercise being carried out by BECCA International. Through the implementation of these plans, communities would be empowered to manage coastal ecosystems and natural resources in ways that protect the flow of ecosystem services and livelihoods in anticipation of changing climatic conditions. Protection of livelihoods would enable communities to better hedge their bets against future uncertainty associated with climate change, such as: unpredictability of weather; extremes in precipitation and drought; and temperature increases and disease outbreaks (in crops, humans and marine organisms). The impacts of the tsunami, a major non-climate related hazard in Samoa, will be incorporated in these plans as the physical and socio-economic importance are so similar to those from storm surge

187. Implementation of the project will be done in close cooperation with the NAPA 3 (GEF/UNDP Project on Adaptation in the Forestry Sector) and the Sustainable Land Use Management Project to ensure the linkage of the activities to protect coastal ecosystems with those associated with restoring degraded watersheds upstream of the coastal areas.

188. The CIM plans currently include a menu of risk management options. They would be updated to increase their relevance and effectiveness in response to Climate Change. As the project would not be able to implement all the identified options, the

¹¹ Government intends to rename the CIM plans to better describe their scope of action which goes beyond infrastructure.

most strategic activities within the Plans would be selected, based on guidelines for selecting “hard” infrastructure and/or “greener” solutions under different conditions, to be developed through TA to be conducted during project preparation (See description in Annex 8). The activities would also be selected to build on existing successful practices in different parts of the country, such as, replanting mangroves, rehabilitation of coastal marshes, conservation areas to protect coral reefs and improved fishing techniques to reduce impacts on the marine ecosystem, which could be replicated and scaled up and added to complement civil works and infrastructure upgrades. In this regard, the project would build on lessons and good practices from the UNDP/GEF/AusAID supported Community Based Adaptation Project which is developing approaches to increasing resilience, and the Sustainable Community Development Project which is demonstrating implementation of CIM Plans in four Districts. Other actions could include scaling up existing successful beach nourishment activities to protect the coastal road and other infrastructure.

189. As already identified in some CIM Plans, the project would support measures to secure key utilities and public service infrastructure in the advent of a disaster. This would involve: (a) retrofitting first response facilities to withstand category five cyclones; and (b) secure power lines and potable water supply. The project would also install community early warning systems where identified in the Plans.

190. Another source of pressure on the coastal area is illegal sand mining. It will therefore be important to identify sustainable sources of building material - sand and stone - from inland locations, to minimise sand mining in the coastal zone.

191. Implementation of this component would reduce the risk of maladaptive (hard) infrastructure and other high profile investments through access to technical assistance and best practice guidance. CIM Plan implementation would reduce physical exposure to future threats and facilitate retreat/setbacks of key infrastructure inland of the hazard lines where feasible, in consultation with community and district officials.

Component 2. Knowledge Management

192. Increased public awareness and access to information about climate change, vulnerability, and adaptation options/disaster preparedness will be very important. Relevant strategies would involve including this information in topics in village meetings/church discussions, introduce it into school curricula, and through the use of various national media. NGOs to be strengthened in Component 3 below would play an important role in these activities. In the context of this project, for example, it will be necessary to collect relevant data on coastal zone geomorphology, bathymetry, surface water flows and groundwater to feed into models of coastal flooding,

saltwater intrusion and aquifer dynamics as well as monitor and record climate change/variability at community level. This information would be linked, for example, to the National Level CC Profile for Samoa, which is being developed under the PPCR Regional Track. Lessons and good practices would be shared among districts in Samoa as well as with other Pacific Island Countries through the Regional Track, through which, Samoa would also benefit from the sharing of good practices from elsewhere. Knowledge management activities would extend beyond the boundaries of this project as the PPCR would coordinate and help systematize the knowledge management work on climate change being undertaken through other initiatives in Samoa. The CRICU will play an instrumental role in coordinating this work and as the link between Samoa and the Regional Track. Provision would also be made under this component to support operation of the CRICU in these activities and in coordinating the CRIP as well as Samoa's overall adaptation program

Component 3. Support to Civil Society Organizations

193. Support will be provided to NGOs, CBOs, academic institutions, media organizations, and other key civil society actors through capacity building and provision of grants to enable them provide services in support of the project's activities and to strengthen their climate resilience related work in general.

194. CSOs to be strengthened would include those who are engaged in community consultations, enhancing awareness of climate change and education of communities about adaptation strategies. Those CSOs would also be strengthened who will act as service providers and support the activities under both investment projects financed by the PPCR. Specific capacity to be strengthened will include the capability to manage and use scientific climate change information, its impacts in Samoa and available adaptation tools and strategies, and activities aimed at improving livelihoods, such as building the climate resilience of aquaculture, agriculture, and tourism activities.

195. Grants, which would be implemented by CSOs, would be awarded to benefit communities outside of the 16 districts targeted under the project. These could support activities such as: (a) low-cost, small-scale projects aimed at sustainable management of natural resources vital to community livelihoods; (b) community awareness raising and education for climate resilience and protection from natural disasters; (c) community research and networking; and (d) building capacity of community organizations in managing their assets, and climate change related advocacy work, especially in terms of promoting interests and inclusion of women, youth, people with disabilities, and other marginalized groups. Development of Information Education Communication (IEC) tools and materials, as needed, would also be supported (see Component 3 above)

Technical Assistance

196. A preparation grant will be requested to inform the design of these interventions. This will consist largely of Technical Assistance (TA) aimed at: (a) increasing the relevance and effectiveness of District Coastal Infrastructure Management plans in response to Climate Change; and (b) determining the right mix of hard vs. soft infrastructure (grey vs green) approaches to decreasing vulnerability and physical exposure of communities to climate related impacts. This will allow an early start for Component 1. Other preparation grant activities will include analyses of the capacity building needs of civil society organizations (including the Private Sector) to raise public awareness about climate change adaptation and to participate in the design and delivery of climate change adaptation measures aimed at increasing the resilience of communities and ecosystems. TA would also help determine the most appropriate implementation modality for provision of grants and capacity building assistance. A further study focusing on understanding the gender differentiated aspects of climate change will help to minimise gender bias in the design and delivery of measures to reduce community vulnerability to climate change and inequality in accessing adaptation benefits supported by the Project.

197. Because the Project will continue to require technical expertise and access to best practice during implementation, provision for ongoing TA in the form of consultant services would also be included in the design of all four project components.

Anticipated Key Indicators and Baselines

Component	Indicators	Baseline	Intended Outcomes	Impacts
Implement CIM Plans to Manage Disaster Risk and Climate Related Threats	Number of CIM Plans revised and implemented	Zero CIM Plans being implemented in the targeted districts	CIM Plans updated to reflect improved assessment of climate risks and strategic options implemented	Better managed coastal resources
	Degree to which key ecosystem services restored or enhanced over time (eg. area of mangrove rehabilitated)	Current status of key measurements of indicator services	Well managed coastal and marine ecosystems continue to provide ecological services and livelihood needs.	Restoration of indicator species to sustainable levels
	Change in awareness of flood risks	Limited awareness of flood risks	Adaptive capacity of communities increased	Communities are more resilient to climate change impacts
	Knowledge of adaptation measures	Limited knowledge of adaptation measures		
Knowledge Management	Communities demonstrate awareness of habitat linkages (both upstream/downstream) and across land/sea interface in climate resilient planning and use of resources	Limited knowledge of threats to ecosystem functioning	Communities understand the importance of and practice sound natural resources management	Reduction of critical threats to habits from upstream and downstream activities
Support to Civil Society Organizations	Self -assessment and expert assessment of increased capacity Stakeholder feedback Self -assessment, and expert assessment of effectiveness of CSO initiatives supported by the project (% rating high or increased effectiveness)	Weak capacity of CSOs to deliver climate resilience related activities to local communities	Strengthened capacity and effectiveness of civil society organizations and groups to undertake activities aimed at enhancing country's climate resilience	Tangible and sustainable social and economic benefits contributing to country's climate resilience which meet the needs of vulnerable groups in Samoa A strengthened voice of CSOs to effectively influence national policies that contribute to country's climate resilience

Implementation Arrangements

198. The Project will be implemented by MNRE, and executed by communities, the private sector and civil society organizations, using a variety of delivery mechanisms. These will be explored during preparation and may include the small grants programmes within MNRE for civil works, the Civil Society Support Programme (CSSP), consultant services, Village Councils, Women's Committees.

Indicative Costs (US\$ M)

Component/Cost Category	PPCR Funding	Co-financing¹²	Total Cost
1. Implement CIM Plans to Manage Disaster Risk and Climate Related Threats	7.1	12.0	19.1
2. Knowledge Management	1.2		1.2
3. Support to Civil Society Organizations	1.0		1.0
Preparation Activities	0.4		0.4
TOTAL	9.7	12.0	21.7

¹²From projects to be supported by EU, Adaptation Fund and LDCF

Section 3

Technical Assistance

199. Technical Assistance will be provided to support establishment of a climate change adaptation trust fund for Samoa. Investment Project 1 also contains a technical assistance component aimed at assessing the vulnerability of the roads infrastructure in Samoa.

As part of project preparation under Investment Project 2, technical assistance will be provided to undertake the following:

- Vulnerability assessment of the primary road network – to provide a technical and financial basis for considering further work to enhance the climate resilience of Samoa’s roading infrastructure;
- Developing a framework that builds on existing plans to manage climate-related risks and facilitates a ridge-to-reef, ecosystem-based approach to adaptation, and determining suitable mixes of “soft” and “hard” interventions to enhance the climate resilience of coastal resources and communities in different parts of Samoa – to provide a functional, integrative framework for implementing Investment Project 2, and for ensuring effective adaptation, including avoidance of mal-adaptation ; and
- Determining the gender-differentiated impacts of climate change in Samoa, and preparing a gender-mainstreaming framework and guidance for implementing gender-aware adaptation measures in Samoa, especially at community level – to ensure that Investment Project 2 provides equitable benefits, regardless of gender.

200. Terms of Reference (TOR) for the above technical assistance packages are provided in Annex 8 to illustrate the scope of work planned.

PART 3

REQUEST FOR PROJECT PREPARATION FUNDING

Overview

201. The Government of Samoa is requesting USD 25 million of PPCR grant financing. This includes USD 0.6 million for project preparation and USD 0.3 million of additional technical assistance. As required under the PPCR guidelines, detailed project concepts for the two Investment Projects, the TOR for related studies and the TORs for the technical assistance, their cost estimates, financing plan, implementation arrangements, and the specific requests for grants from the PPCR have been provided in Part 2 of the CRIP.

Specific Request

Investment Project 1

Pilot Program for Climate Resilience			
Project/Program Preparation Grant Request¹³			
1. Country/Region:	Samoa, East Asia and Pacific	2. CIF Project ID#:	(Trustee will assign ID)
3. Project Name:	<i>Enhancing the Climate Resilience of West Coast Road</i>		
4. Tentative Funding Request (in USDmillion total) for Project¹⁴ at the time of SPCR submission (concept stage):	<i>Loan:</i>	<i>Grant: US\$15 million</i>	
5. Preparation Grant Request (in USDmillion):	<i>0.2 million</i>	<i>MDB: The World Bank</i>	
6. National Project Focal Point:	<i>Ministry of Finance</i>		
7. National Implementing Agency (project/program):	<i>Land Transport Authority; Ministry of Natural Resources and the Environment</i>		
8. MDB PPCR Focal Point and Project/Program Task Team Leader (TTL):	<i>Headquarters-PPCR Focal Point: Samuel Wedderburn</i>	<i>TTL: Demetrios Papathanasiou</i>	

¹³ A separate template needs to be presented for each project and programme preparation grant request listed in the SPCR.

¹⁴ Including the preparation grant request.

9. Description of activities covered by the preparation grant:	
The preparation grant will finance technical assistance and incremental costs required to inform the design of activities under the two project components. This includes TA aimed at: (i) preparing environmental and social assessments to meet the preparation standards and safeguards requirement of the World Bank, including relevant consultations; (ii) prepare detailed Terms of Reference for consultancies to support project implementation of component 1 of the project (detailed design and costing of West Coast Road); and the technical assistance for Component 2 of the project to evaluate and assess the climate resilience and vulnerability of Samoa's roads network. As part of the TA packages financed under the Preparation grant, the purchase of some equipment and data sets, training workshops and travel may be required, in addition to consultant services.	
10. Outputs:	
Deliverable	Timeline
(a) Environmental and Social Impact Assessment and relevant Management Plans	4 months from start of TA
(b) ToRs for consultancies	2 months from start of TA
...	
11. Budget (indicative):	
Expenditures¹⁵	Amount (USD) - estimates
Consultants	120,000
Equipment	
Workshops/seminars	30,000
Travel/transportation	30,000
Others (admin costs/operational costs)	10,000
Contingencies (max. 10%)	10,000
Total Cost	200,000
Other contributions:	
• Government	20,000 (in-kind staff time)
• MDB	20,000 (in-kind staff resources under complementary project)
• Private Sector	
• Others (please specify)	
12. Timeframe (tentative)	
Submission of pre-appraisal document for PPCR Sub-Committee Approval: <i>6 months from Grant signing</i> Expected Board/MDB Management ¹⁶ approval date: <i>October 2011</i>	
13. Other Partners involved in project design and implementation¹⁷: Ministry of Natural Resources and the Environment; Local NGOs; Other Government Agencies as required for consultations; Local Communities and Villages; Private Sector Contractors	
14. If applicable, explanation for why the grant is MDB executed: N/A	

¹⁵ These expenditure categories may be adjusted during project preparation according to emerging needs.

¹⁶ In some cases activities will not require MDB Board approval

¹⁷ Other local, national and international partners expected to be involved in design and implementation of the project.

15. **Implementation Arrangements** (incl. procurement of goods and services): The Grant will be used by LTA to prepare the project using arrangements similar to the on-going arrangements used under the Samoa Infrastructure Asset Management project and the Post Tsunami Reconstruction Project, where LTA and the MNRE are implementing agencies. Procurement will follow standard World Bank guidelines. Financial Management and Disbursement functions will be facilitated by the Bank's office in Sydney.

Investment Project 2

PILOT PROGRAM FOR CLIMATE RESILIENCE			
Project/Program Preparation Grant Request¹⁸			
1. Country/Region:	East Asia/Pacific	2. CIF Project ID#:	(Trustee will assign ID)
3. Project Name:	Enhancing the climate resilience of coastal resources and communities		
4. Tentative Funding Request (in USDmillion total) for Project¹⁹ at the time of SPCR submission (concept stage):	<i>Loan:</i>	<i>Grant:</i> US\$ 9.7M	
5. Preparation Grant Request (in USDmillion):	US\$ 0.4M	<i>MDB: The World Bank</i>	
6. National Project Focal Point:	Ministry of Finance		
7. National Implementing Agency (project/program):	Ministry of Natural Resources and Environment		
8. MDB PPCR Focal Point and Project/Program Task Team Leader (TTL):	<i>Headquarters-PPCR Focal Point: Samuel Wedderburn</i>	<i>TTL: Samuel Wedderburn,</i>	
9. Description of activities covered by the preparation grant:	<p>The preparation grant will finance, for the most part, technical assistance required to inform the design of activities under all four project components, and develop guidelines and manuals for use during the project. This includes TA aimed at: (i) increasing the relevance and effectiveness of District Coastal Infrastructure Management plans in response to Climate Change ;(ii) determining the right mix of hard vs. soft infrastructure (grey vs green) approaches to decreasing vulnerability and physical exposure of communities to climate related impacts; (iii) analyses of capacity building needs of civil society organizations (including the Private Sector) to raise public awareness about climate change adaptation and to participate in the design and delivery of climate change adaptation measures aimed at increasing the resilience of communities and ecosystems; and (iv) a study focusing on understanding the gender differentiated aspects of climate change will help to minimize gender bias in the design and delivery of measures to reduce community vulnerability to climate change and inequality in accessing adaptation benefits supported by the Project. As part of the TA packages financed under the Preparation grant, the purchase of some equipment and data sets, training workshops and travel will be required, in addition to consultant services. (TORs for these activities are in Annex8). In addition, preparation activities would include social and environment assessments to address Safeguards issues, financial and economic analysis and preparation of a project document.</p>		
10. Outputs:			
Deliverable	Timeline		
(a) Update and Develop a Framework for Prioritizing Investments in the District Coastal Infrastructure Management (CIM) Plans taking account of other planning frameworks such as Sustainable Management Plans and Village Disaster Risk Management Plans	To be completed by December 2011		

¹⁸ A separate template needs to be presented for each project and programme preparation grant request listed in the SPCR.

¹⁹ Including the preparation grant request.

(b) TA to determine optimum mix of hard and soft engineering solutions to secure vital infrastructure, including first response facilities, utilities and safe havens in the coastal zone against disasters, as well as to address chronic climate impacts related to SLR and changes in precipitation patterns, such as coastal erosion, salt water intrusion, and fluxes in groundwater levels and relative salinity. Report with guidelines and decision support tools.	To be completed by January, 2012.
c) Report on assessment of capacity of CSOs to engage in and deliver elements of national Climate Change Adaptation Agenda in Samoa. Recommendations for capacity building of CSOs and for participation in the project	To be completed by September 2011.
(d) Report on gender differentiated aspects of Climate Change in Samoa in terms of vulnerability to impacts and capacity of men and women to adapt to CC.	To be completed by December 2011.
11. Budget (indicative):	
Expenditures²⁰	Amount (USD) - estimates
Consultants	\$275,000.
Equipment	50,000.
Workshops/seminars	20,000.
Travel/transportation	25,000.
Others (admin costs/operational costs)	30,000.
Contingencies (max. 10%)	
Total Cost	\$400,000.
Other contributions:	
• Government	40,000. (in-kind)
• MDB	40,00 (staff time under other projects/activities)
• Private Sector	
• Others (please specify)	
12. Timeframe	
The project is expected to be submitted to the Bank's Board by June 2012. Submission of pre-appraisal document for PPCR Sub-Committee Approval: April, 2012 Expected Board/MDB Management ²¹ approval date June 30, 2012:	
13. Other Partners involved in project design and implementation²²: Associations of Civil Engineers, NGOs, and Government Agencies actively engaged in addressing coastal erosion and sea level rise in low lying coastal areas and SIDS; international NGOs, CSOs and members of the research community with experience in applying the Ecosystem-Based Approach to climate adaptation and building resilience in the coastal zone; local CSOs and umbrella organizations in Samoa working with communities; the Ministry of Natural Resources and Environment, the Ministry of Agriculture and Fisheries and the Ministry of Women's Groups in Samoa; the Climate Change Advisory Committee of Samoa along with District Officials and Traditional Rulers at the Village level.	

²⁰ These expenditure categories may be adjusted during project preparation according to emerging needs.

²¹ In some cases activities will not require MDB Board approval

²² Other local, national and international partners expected to be involved in design and implementation of the project.

14.	If applicable, explanation for why the grant is MDB executed:
15.	Implementation Arrangements (incl. procurement of goods and services): <i>The grant will be implemented by MNRE following standard World Bank procurement guidelines. Additional support on Procurement, Financial Management and Disbursement functions will be facilitated by the Bank's office in Sydney.</i>

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World Bank, 2010: Economics of Adaptation to Climate Change Samoa. The World Bank Group, Washington, DC, 72pp.

Annex 1

PPCR-Samoa Programme Preparation and Related Information

1. The Government of Samoa appointed the Ministry of Finance (MoF) as the focal ministry for the PPCR, and designated the Chief Executive Office of that Ministry as the focal counterpart. The PPCR pilot will be executed in a joint partnership with the Ministry of Natural Resources and Environment (MNRE) and other relevant agencies in order to take advantage of their comparative advantages and benefit from synergies and complementarities.
2. To the extent possible, the PPCR is using implementation frameworks that are already in place, such as the National Climate Change Country Team (NCCCT) and sector coordinators. A PPCR Steering Committee has been established, comprising Ministry of Finance (MoF) (chair), Ministry of Natural Resources and Environment (MNRE) (deputy chair), the Land Transport Authority (LTA), the Ministry of Works, Transport and Infrastructure (MWTI), the Electric Power Corporation (EPC), Ministry of Women, Community and Social Development (MWCSD), Ministry of Agriculture and Fisheries (MAF), the Samoan Umbrella of Non-governmental Organisations (SUNGO), the Chamber of Commerce (COC) and representatives of development partners.
3. The Climate Resilience Investment Coordination Unit (CRICU), based in the MoF, serves as the Project Management Unit (PMU), including acting as the secretariat for the PPCR Steering Committee. PPCR is supporting the establishment and operation of the CRICU. The existing resources in the Energy Unit of the MoF will assist CRICU, as required. CRICU will undertake specific project management tasks as instructed by the CRIP Programme Coordinator, on advice of the PPCR Steering Committee.
4. Through participatory processes Samoa has already made considerable progress in analysis, policy development and planning related to climate change areas, including preparing the National Policy for Combating Climate and the National Adaptation Programme of Action (NAPA). Due to this strong enabling environment for adaptation that already exists in Samoa it was agreed that Phase 1 will be of short duration, possibly six months. For the same reason, preparation for Phase 2 began concurrently with the initiation of Phase 1 activities.
5. In accordance with the PPCR Guidelines, there have been two Joint Missions, led by the Government of Samoa, to assist in preparing the Phase 1 proposal as well as the CRIP. A joint WB-ADB team visited Apia between November 16 and 19, 2009

to carry out a scoping mission for the Samoa Pilot Programme on Climate Resilience (PPCR). It also followed up on the Samoa case-study of the World Bank Economics of Adaptation to Climate Change (EACC) Study. The Samoa case study provides background analytical work that supported preparation of the CRIP during Phase 1 of the PPCR.

6. The first joint mission, led by the Ministry of Finance (MoF) and including World Bank, ADB and AusAID/Department of Climate Change, was fielded in Samoa in early June, 2010. A technical mission, again led by MoF and including the World Bank and AusAID/Department of Climate Change, was fielded in Samoa from July 12 to 16, 2010. A second technical mission, also led by MoF, was fielded in Samoa from December 13 to 17, 2010. A second Joint Mission was in Apia from January 31 to February 11, 2011. It assisted the Government in completing preparation of the CRIP for submission to the CIF Administration Unit. Using fully participatory processes, all missions worked closely with key stakeholders and players, including the Ministry of Natural Resources and Environment (MNRE), the Umbrella of Non-governmental Organisations (SUNGO), the Chamber of Commerce and the United Nations Development Programme (UNDP).

Annex 2

Stakeholders and Consultations

A. Key Stakeholders who Fully Engaged in the Consultation Processes

Ministry of Finance
National Climate Change Country Team
Ministry of Natural Resources and Environment
Ministry of Women, Community and Social Development
Ministry of Works, Transport and Infrastructure
Land Transport Authority
Samoa Water Authority
Electric Power Corporation
Ministry of Agriculture and Fisheries
Samoa Umbrella of Non-governmental Organisations (SUNGO)
Samoa Women's Committee Development Organisation
Pan Pacific South East Asia Women's Association (PPSEAWA)
Samoa Chamber of Commerce
Women in Business Development Inc.
Samoa Farmers Association
Pacific Regional Environment Programme
United Nations Development Programme
Government of Australia
Government of New Zealand
Government of Japan
The European Union
The Asian Development Bank
The World Bank

B. Information on Consultation Processes

Consultations with Women

1. Special efforts were made to involve representatives of women's groups. These included Women in Business Development, the Pan Pacific South East Asia Women's Association and the Samoa Women's Committee Development Organisation. The Ministry of Women, Community and Social Development assisted in ensuring full and meaningful involvement of women in the consultations related to preparation of the Phase 1 proposal as well as the CRIP.

2. Analysis of the lists of participants for all the formal consultation meetings indicated that there was approximately equal participation of men and women.

Initial Consultations

3. Following Samoa's acceptance of the offer to participate in the PPCR, an informal scoping mission was held on November 16-17, 2009 to begin discussions with the government and other stakeholders on the relevance, objectives and scope of the PPCR in enhancing the country's climate resilience. In the following months, the Ministry of Finance, as the Focal Point for PPCR-Samoa, invited Government ministries and other agencies to participate in a stock-take of ongoing climate adaptation activities, as the premise for the formal joint mission that would launch the Samoa pilot. During this time initial stakeholder roundtable meetings were also held, to ensure that all parties were fully informed on PPCR preparatory procedures as well as about opportunities to participate in preparing for, and implementing, the PPCR in Samoa. Every reasonable effort was made to ensure equitable and meaningful participation in these and subsequent meetings.

Consultations with Civil Society, including the Private Sector

4. Individual and joint meetings were held with representatives of key civil society organisations at regular intervals during preparation of the Phase 1 proposal as well as the CRIP. This included Samoa's Umbrella of Non-governmental Organisations.

Consultations with Development Partners

5. Individual and joint meetings were held with representatives of Samoa's key development partners at regular intervals during preparation of the Phase 1 proposal as well as the CRIP.

Consultations with Government Stakeholders

6. Individual and joint meetings were held with representatives of Samoa's key ministries as well as other Government agencies. These were held at regular intervals during preparation of the Phase 1 proposal as well as the CRIP.

Final All-stakeholder Roundtable

7. Immediately prior to the CRIP being finalised and submitted by Government representatives of all stakeholders were invited to participate in a roundtable to discuss the CRIP. A draft of the CRIP was circulated to all stakeholders prior to the meeting, along with a request for written comments. Stakeholders were also informed that oral comments could be made at the roundtable.

There were 34 participants from Government, civil society including the private sector, and development partners.

Annex 3

Draft Strategy to Engage Civil Society, including the Private Sector, in Building Climate Resilience in Samoa²³

1. Addressing social vulnerability of Samoan people to climate challenges is at the heart of the PPCR-Samoa strategy. According to the IPCC, vulnerability is a function of the character, magnitude, and rate of climate variability and change to which a system is exposed, as well as the sensitivity and adaptive capacity of that system. Resilience exists where adaptive capacity is high, inequalities are addressed, and exposure is minimised. It reflects the ability to deal with change and continue to develop. A growing body of global evidence shows that vulnerability to climate change is socially differentiated. Exposure to climate change poses different risks to different groups of people. The ability to endure a cyclone or a drought is shaped by a host of social factors including degree of social inequality; access to resources; poverty status; extent of representation; and effectiveness of systems of social security, early warning and planning. People that contend with multiple inequalities will be most vulnerable to climate change.

2. Increasing resilience of vulnerable groups therefore calls for understanding of climate change as a socio-ecological phenomenon. Effective adaptation practices around the globe promote the tools and methods that enhance a countries' capacity for development effectiveness and avoid negative social impacts. These include: (i) combining investments in hard and soft adaptation options to meet the needs of the poorest and most vulnerable; (ii) considering and building on past strategies to cope with climate variability when planning future adaptation Interventions; (iii) pursuing adaptation interventions that realise co-benefits with sustainable development; (iv) anchoring decision-making processes in inclusive and bottom-up participatory processes; (v) promoting transparency, accountability, the capacity to monitor and evaluate results, and the integration and coherence of policies across sectors and scales; and (vi) supporting dynamic civil society organizations. Wherever possible, these good practices will be incorporated in PPCR-Samoa activities.

3. The complex social responses resulting from climate change in Samoa will require an effort involving a broad range of stakeholders, including non-governmental organizations (NGOs), community organizations, academic institutions, media, think tanks and the citizens themselves. Involvement of civil society can complement the Government's efforts and help sustain climate resilience building strategies. In a country where the political framework places considerable emphasis on traditional and local leadership, civil society's close ties with local communities can be used to

²³ The detailed strategy for civil society engagement will be developed during project preparation

ensure climate change is included in their agenda and undertake social action, of the kind and magnitude that is needed for adaptation strategies.

4. Engagement of communities, civil society organizations, and the private sector is envisaged across the PPCR-Samoa activities. The strategy for their involvement is structured under the following three broad themes.

Consultations and Participation

5. Multi-stakeholder consultations have been a major element of the preparation of the CRIP for Samoa, and will remain a critical part of the design and implementation of the investment projects for a climate resilient infrastructure and for enhancing the resilience of coastal resources and communities. Both of the investment projects will require further extensive consultations with local communities, community-based organizations, and broader civil society. The investment project for the climate resilient West Coast road from Apia to the airport will engage with communities through village-based consultations, in particular with regard to: (i) the need for drainage easements; (ii) access to parts of the road reserve currently used by adjacent landowners, (iii) maximising co-benefits and minimising any adverse consequences related to the upgraded road; and (iv) major traffic disruptions during the construction activities. Moreover, the road project will also promote opportunities to employ local villagers to undertake appropriate tasks, where possible. The private sector will also be significantly involved through the execution of larger civil works.

6. The second investment project aims to strengthen the climate resilience of coastal communities and resources. It will do so through a participatory process of identification of the priority interventions and the ways in which they should be addressed by communities themselves. The intention is to increase community resilience by empowering communities to identify and discuss hazards and risks and to participate in collective problem solving through identification of a suitable mix of “soft” and “hard” solutions to enhance the climate resilience of coastal resources and communities. In the course of these consultations it will therefore be crucial to discuss with the communities different options for addressing the climate-related challenges and short- and longer-term implications of each option, including the timely preparation of environmental impact assessments.

7. The project will build on: (i) the empowerment consultation model that was applied in the initial development of the CIM plans, which used a collaborative, consensus-building multilevel governance approach, blending traditional decision making systems with contemporary ones; and (ii) the blended appreciative enquiry and rural appraisal methodology used by the UNDP in its four pilots under the Community Centred Development Programme and by the MWCSA in its village

consultation and planning processes. Emphasis will be on inclusion of women and youth. Along with Government staff, non-governmental and community-based organizations are expected to play an important facilitation role in this process. ‘Hands on’ training for all Governmental and non-governmental facilitators will be paramount for ensuring a supply of human resource capital in support of the process. In addition to participating in the planning process, communities will also implement and monitor a number of project activities aimed at managing climate related hazards in a sustainable manner.

Capacity Building for Civil Society and Communities

8. It is envisaged that PPCR-Samoa’s capacity building support would be twofold – targeting civil society organizations and local communities. While much has been achieved in terms of raising awareness of communities and the general public about climate change challenges in Samoa, the need for further capacity building of civil society actors in this context has emerged as a priority during the consultations with various stakeholders in preparation of the PPCR-Samoa Phase II. Several non-governmental organizations and community-based organizations have gained considerable experience in working with communities on strengthening their capacity to adapt to new climate challenges through practical actions. These organizations, however, are in need of further capacity building if they are to embark on scaling-up efforts to enhance awareness of climate change and its impacts while at the same time identifying and implementing interventions that will build resilience.

9. To the extent possible, any awareness raising capacities should be coordinated with MNRE and build on MNRE’s extensive experience, publications and materials on climate change in Samoa. The capacity of civil society will require further strengthening also in terms of specific adaptation interventions as it is expected to also act as a service provider and support the activities under both of the investment projects financed by PPCR. The holistic, ecosystem-based approach to adaptation that will be promoted under the second investment project will require provision of support to communities that the government agencies may not be able to deliver at the village level due to non-existent or limited number of extension workers.

10. Non-governmental and community-based organizations will therefore be involved in assisting the communities in approximately 16 districts to carry out the activities aimed at enhancing their climate resilience. These are likely to include activities related to improving livelihoods, such as building the climate resilience of aquaculture, agriculture, and tourism activities. The second investment project will also aim to empower local communities by building their capacity to assess their own needs, discuss these with the government, and implement and supervise the construction of infrastructure and other activities under PPCR. In parallel to

implementation of the first investment project, technical assistance will be provided to assess specific capacity building needs of civil society organizations, which would then be addressed under the component providing the support to civil society as part of the second investment project.

Support for Civil Society Initiatives

11. Beyond complementing Government's efforts through service delivery, civil society organizations and groups play a critical role as a watchdog and advocate of inclusive and accountable national and local policies and programmes, and as a conduit for voice of the most vulnerable and disenfranchised groups. In Samoa, civil society actions help bridge the gap between the national-level authorities and local communities by feeding the information about the needs of communities back to national policy- and decision-makers, and by advocating for greater equality in community and national decision-making on behalf of disadvantaged groups. Whether or not people will seize the opportunities to strengthen their climate resilience will depend critically on the support they would receive from civil society organisations (CSOs). However, CSOs themselves are in need of capacity development in use of climate adaptation strategies and need sustained support. Hence the second investment project will include a component that would provide grants and capacity building assistance to civil society so as to strengthen their climate change-related work. This would allow communities outside of the districts targeted under the two investment projects to benefit from the support of CSOs and CBOs through nation-wide and/or local initiatives. These activities may include low-cost, small-scale projects aimed at sustainable management of natural resources vital to community livelihoods, community awareness raising and education for climate resilience and protection from natural disasters, community research and networking, building capacity of community organizations in managing their assets, and climate change related advocacy work, especially in terms of promoting interests and inclusion of women, youth, people with disabilities, and other marginalised groups. In providing support to civil society, PPCR would use one of the existing mechanisms and avoid setting up new structures. A study will be undertaken in the course of the preparation of the second investment project to determine the most appropriate implementation modality.

12. Gender dimensions. Gender is an essential, cross-cutting theme that will be actively promoted in the PPCR activities. All abovementioned activities aimed at reducing the social vulnerability of Samoan citizens will put integrate gender perspectives. In consultations and other participatory processes, special attention will be given to inclusion of voices and contributions of women. In selecting the CSOs for the envisaged capacity building and grants, advantage will be given to groups that promote greater equality and gender sensitive inputs into national and local policy- and decision-making. Finally, technical assistance will be provided to determine

gender differentiated impacts of climate change in Samoa, and how these can be addressed through gender appropriate adaptation measures, especially at community level. The study would look at what resources women and men in Samoa have lost due to climate change manifestations and to analyse what capitals are most central for the coping and adaptation capacity. The importance of including coping and adaptation capacities in an analysis of differentiated vulnerability becomes evident when considering natural hazard experience in the world where different social groups are affected in different ways, even though they may experience the same hazard, or the same combination of hazards. A gender perspective will be applied to see what difference in access to capitals between men and women exist and what that means in terms of gender-differentiated vulnerability to natural disasters and incremental climate change impacts. The findings of the study will be integrated in PPCR activities. The study will also be shared with the Ministry of Women and Community and Social Development with the aim to mainstream the responses to specific gender differentiated impacts across sectors and government programmes.

Annex 4

Climate Change Policies and Action Plans

1. 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. Legislation and policies that are relevant in this regard are:

National Adaptation Plan of Action (2005) (NAPA)

2. 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)

3. 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.

4. 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.

National Policy to Combat Climate Change (2007)

5. 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)

6. 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.

7. 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 (evasive 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.

8. 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

9. 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.

Samoa National Infrastructure Strategic Plan (currently in draft)

10. The Samoa National Infrastructure Strategic Plan is currently in draft. The intention is that it will be finalised by the end of February, 2011. 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.

11. 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.

Annex 5

Key Assistance Related to Climate Change Adaptation Provided by Development Partners

1. Development assistance provided to Samoa by Australia is delivered through the Samoa-Australia Partnership for Development. Samoa is a major stakeholder in the International Climate Change Adaptation Initiative (ICCAI), in which Australia is investing AUD150 million from 2008-2011 to meet priority climate adaptation needs in the Asia-Pacific region. Australia has contributed AUD40 million to the PPCR through the ICCAI. Samoa is also involved in ongoing programmes funded by Australia such as the South Pacific Sea Level and Climate Monitoring Project and the Pacific Islands - Climate Prediction Project.
2. Under the United Nations Development Assistance Framework, United Nations agencies support development in Samoa, consistent with the SDS. The Global Environment Facility (GEF), through UNDP, has financed several climate change-related projects in Samoa, from the preparation of the NAPA to the implementation of adaptation projects in key economic sectors, including agriculture, health, forestry, tourism and coastal communities. Through the Samoa UNDP-GEF Small Grants Programme and UNDP-funded Sustainable Community Development Programme, community-based adaptation projects are being implemented. These use existing village-level delivery mechanisms and strengthen national-local level institutional linkages.
3. In recent years the World Bank has assisted Samoa through a series of projects addressing post-cyclone reconstruction, infrastructure asset management and, most recently, post-tsunami reconstruction. The ongoing Samoa Infrastructure Asset Management (SIAM) Phase 2 project aims to enhance the economic, environmental and social sustainability of transport and coastal infrastructure assets, and to manage these assets, natural resources, and disaster risks through an effective partnership with private sector stakeholders. The World Bank support to Samoa has increased in the last two years, in response to the devastating tsunami of September 2009 with an emergency loan and grant for post-tsunami recovery in the transport sector which includes elements of disaster risk management and additional financing in the health sector. The World Bank under the Samoa Asset Management Programme was also engaged in community support projects to enhance resilience.
4. Ongoing support in climate change from Asian Development Bank includes a loan for the Samoa Sanitation and Drainage Project (2003), to improve environmental conditions and public health of the Apia urban area. A loan and grant have also been

provided for the Power Sector Expansion Project (2007). Support for climate change adaptation by New Zealand's Aid Programme is mainly delivered through multilateral regional programmes and mainstreamed into the regular programmes for health and sustainable economic development. Japan is engaging in the upgrading of the weather observation system for the Meteorological Office, a forest preservation programme as well as renewable energy with a focus on solar power. The latter activity is delivered through the regional Pacific Environment Community facility. China is particularly active in supporting renewable energy and public infrastructure.

5. European Union engagement on climate change issues is mainly through its programme in the water sector and the support to civil society. Over the past decade the water sector has been, and remains, the key focal sector for European Union assistance. The issues as identified under the Second National Communication constitute work in progress under the water sector programmes, with the necessary resources being provided by the European Union through sector budget support.

Annex 6

Example of a Coastal Infrastructure Management (CIM) Plan

Available at

<http://www.mnre.gov.ws/projects/siam-2/documents/CIM%20Plans/AleipatalLaloIG-FE.pdf>

Annex 7

Current Status of Samoa's NAPA Projects

NAPA 1 - Climate Services Reportings (CSRs) have been prepared for agriculture and health sectors by NIWA under NAPA 1 Project.

NAPA 2 – The Regional PACC Project has commenced implementing both soft and hard solutions to protect coastal infrastructures in accordance with the CIM Plans (now completed for 41 Districts, but requiring updating and implementation of 8 District CIM Plans possibly under PPCR)

NAPA 3 – Project Design Document has been finalised

NAPA 4 – Final Work Plans and Annual Budgets (Year 1) have been completed for all 5 sectors, Ground Water, Surface Water, Meteorology and Climate Change Services, Tourism and FESA based on \$AUD1.15M funding put in place for 2009/2010 Financial Year. Tourism is also attracting additional CCA funding from LDC Fund for Climate Change

Annex 8

Terms of Reference for Technical Assistance

A. Establishing Samoa's National Climate Change Adaptation Trust Fund

Background

1. The Pilot Programme for Climate Resilience (PPCR) is the first active Programme under the Strategic Climate Fund (SCF) of the Climate Investment Funds (CIF). The PPCR will be transformational by piloting and demonstrating approaches for the integration of climate risk and climate resilience into core development policies, planning, budgeting and implementation, and to strengthen related capacities at the national and regional levels. The programme aims to provide incentives for scaled-up action and transformational change in integrating climate resilience considerations in the participating country's development strategies and programmes and on other ongoing initiatives; and enable learning-by-doing and sharing of lessons and good practice at country, regional and global levels.

2. The PPCR is implemented in two phases. Phase 1 includes preparation of a Strategic Programme for Climate Resilience (SPCR). Preparing the SPCR involves: (i) a stocktaking of the country situation, including progress in considering climate resilience in development planning and investments and in other ongoing and planned programmes; (ii) an assessment of the country's readiness to accelerate this process with PPCR support; and (iii) defining gaps and needs to formulate the SPCR (analyses, consultations, essential immediate capacity building, and other processes). The SPCR is implemented in Phase 2.

3. Samoa has been selected for participation in the PPCR as one of three pilot countries in a Pacific Regional Program, and nine countries worldwide as well as the Caribbean region. Samoa's acceptance of this offer to participate was confirmed by the PPCR Sub-committee in September 2009. Samoa submitted the Phase 1 proposal in August, 2010. The proposal was approved on October 15, 2010 and Phase 1 implementation began in November. This included preparation of the SPCR, which in Samoa is referred to as the Climate Resilience Investment Programme (CRIP). The CRIP was submitted on February 18, 2011.

4. One component of the CRIP is establishing Samoa's National Climate Change Adaptation Trust Fund. This is intended to be a repository and disbursement facility for funds received by the Government of Samoa, and that are intended to help reduce

the adverse consequences of climate change at national and sub-national levels. The Government's wish is to, as far as possible and appropriate, harmonise the management and use of the funds received from diverse sources in order to increase the effectiveness and sustainability of the assistance provided by development and other partners. A Trust Fund has been proposed as the appropriate mechanism for achieving this aim.

The Technical Assistance

5. The technical assistance will be provided by recruiting a firm or a team of individual consultants who can cover the activities listed in the Scope of Work, including the legal considerations in establishing and managing a national trust fund and the management of trust funds in order to ensure the long term sustainability of the facility.

Scope of Work

6. The technical assistance team will consider all relevant aspects for designing, establishing and operating a National Climate Change Adaptation Trust Fund for Samoa in ways that harmonise the management and use of the funds received from diverse sources while also ensuring the effectiveness and sustainability of the assistance provided by development and other partners. The team will provide all of the detailed information and guidance required to establish the Trust Fund and to operate it in a successful and sustainable manner.

7. Specifically the technical assistance team will undertake the following tasks:
- Review experience of other countries in establishing and operating trust funds intended to serve a similar purpose to Samoa's Adaptation Trust Fund, and identify lessons learned and good practices;
 - Review the adequacy of the trust fund mechanism for the business needs of Samoa and compare with other options for achieving sustainable financing of climate change adaptation and
 - Review the experience of Samoa in establishing and operating trust funds, and identify lessons learned and good practices;
 - Review the relevant domestic legislation and international agreements of relevance to the proposed trust fund;
 - Prepare recommendations and related documentation concerning the type (i.e. legal entity), required legal agreements and their subsequent amendments, proposed objectives, costs, and administrative arrangements and agreements for the Trust Fund; legal agreements should cover such matters as the governance and the purposes and activities for which the trust funds may be

used as well as the respective rights and obligations of the parties to such agreements;

- Prepare recommendations and related documentation concerning the trustee function, including roles and responsibilities;
- Prepare recommendations and related documentation concerning management, staffing, and administrative cost recovery policy including a schedule of fees;
- Prepare recommendations and related documentation related to financial reporting and audits;
- Prepare recommendations and related documentation related to results-based monitoring and evaluation of the Trust Fund activities, outputs and outcomes;
- Prepare recommendations and related documentation related to arrangements governing the use of funds (eligibility requirements; restrictions, calls for proposals, processing funding requests, overseeing compliance of grant activities with administration and grant agreements including recipient's obligations in respect of procurement, contract administration, financial management and auditing, and progress reporting; suspension; cancellation refunds and sanctions, etc), progress and financial reporting, fee arrangements, auditing, disclosure of information, among others;
- Prepare recommendations and related documentation concerning any policy issues that must be resolved before the Trust Fund is established;
- Prepare recommendations and related documentation concerning application of environmental and social safeguard policies;
- Prepare recommendations and related documentation concerning activation of the Trust Fund and closing of the Trust Fund; and
- Prepare recommendations and related documentation risk identification and management, including conflicts of interest.

Deliverables

8. The technical assistance team will provide the comprehensive and detailed information and guidance required to establish the Trust Fund and to operate it in a successful and sustainable manner.

Implementation

9. The technical assistance will be executed by the Government of Samoa.

Risks and Their Management

10. No risks related to establishing the Trust Fund have been identified.

Results and Performance Framework

11. The key results expected are:

- Information required to design, establish and operate a National Climate Change Adaptation Trust Fund for Samoa in ways that harmonise the management and use of the funds while also ensuring the effectiveness and sustainability of the assistance provided by development and other partners.

Key indicators and Baseline

Component	Activities	Indicator(s)	Baseline	Intended Outcome(s)	Intended Impact(s)
Consultancy	Prepare comprehensive and detailed information and guidance required to establish the Trust Fund and to operate it in a successful and sustainable manner	All legal, administrative and other relevant agreements and operation procedures agreed on by Government and development assistance partners	No agreements and operational procedures in place	Harmonised and sustainable financing for adaptation interventions in Samoa	Adequate financing for adaptation in Samoa

Duration and Cost

12. The technical assistance will be provided over a period of six months for a total estimated cost of USD 300,000.

B. Vulnerability Assessment of the Primary Road Network

Background

13. The main road network (Classes 1 and 2) in Samoa comprises approximately 650 km on the two largest and most populated islands, Upolu and Savai'i. The major portion of the network – some 450 km – is located on Upolu. Coastal roads run around the complete perimeter of both islands, while Upolu also has three cross-island roads connecting the north and south coasts. In the north west of Upolu there is an extensive network of urban, suburban and peri-urban roads in and around the Samoa's capital, Apia.

14. The coastal roads are all vulnerable to high rainfall events (leading to surface flooding and deterioration of the road surface) and extreme high sea levels (leading to accelerated erosion of the road profile). In addition, high water tables compromise the road surface (leading to deterioration of the road pavement layers). The inland roads are similarly vulnerable to high rainfall events, particularly on steep gradients where landslips can block drains and close roads, and where increasingly inadequate or poorly maintained drainage causes flooding, severe erosion and deterioration of the road surface.

Development Objectives

15. Establishment of a climate vulnerability index for Samoa's primary road network, and a costed action plan to implement a prioritised climate resilience program.

Anticipated Components and Activities

16. A specialist technical consultant will undertake a detailed assessment of the primary road network on Upolu and Savaii with respect to climate vulnerability. This will involve a combination of fieldwork, data collection, research and analysis. It is expected that the output of the assessment will be a vulnerability index, setting out the extent to which each road link is vulnerable to each aspect of climate change, and the estimated cost of increasing its resilience to an agreed standard. The study will also include a costed programme of prioritised investments to address the most vulnerable sections of the road network.

Key indicators and Baseline

Component	Activities	Indicator(s)	Baseline*	Intended Outcome(s)	Intended Impact(s)
Consultancy	Vulnerability Assessment	Km of road assessed	Zero	Total network assessed	Vulnerability assessed
	Prepare Vulnerability Index	Vulnerability	No index	Index to inform investment programme for resilience	Highest priorities identified for investment

* Indicative only; a baseline study will be conducted prior to implementation of activities for this Investment Project

Institutional Arrangements

17. The technical assistance will be supervised by the Land Transport Authority (LTA). This Government agency has been successfully implementing other World Bank financed road works. A consulting firm or firms will be procured through competitive bidding to undertake fieldwork and data collection, research and analysis, preliminary engineering design and cost estimates of prioritised investments.

Risks and Their Management

18. The follow risks and risk management options have been identified:

- *Quality of Data:* the quality of the study output will be dependent on availability and accuracy of a range of data. While the physical road condition data will be collected through fieldwork, the quality of applicable topographic, meteorological, climatic and oceanographic data may not be always adequate for accurate assessments. The proposed study will highlight uncertainties related to existing data and assist in identifying such weaknesses that could be addressed over time.

Results and Performance Framework

19. The key results expected are:

- Entire primary road network of Upolu and Savaii assessed for vulnerability to climate risks;
- Vulnerability index of primary road network established; and
- Investment plan for prioritised climate resilience improvements.

C. Climate Change Capacity Building and Support to Civil Society in Samoa

Rationale

20. While much has been done in terms of raising awareness of communities and the general public about climate change challenges in Samoa, the need for further capacity building of civil society actors in this context has emerged as a priority during the consultations with various stakeholders in preparation of the PPCR Phase II. Several non-governmental organizations and community-based organizations have gained considerable experience in working with communities on strengthening their capacity to adapt to new climate challenges through practical actions. These organizations, however, are in need of further capacity building if they are to embark on the task of enhancing awareness of climate change and its impacts while at the same time identifying options for building resilience. The capacity of civil society will require further strengthening also in terms of specific adaptation strategies as it is expected to also act as a service provider and support the activities under both investment projects financed by PPCR. The holistic, ecosystem-based approach to adaptation that will be promoted under the second investment project will require provision of technical assistance to communities that the government agencies may not be able to deliver at the village level due to non-existent or limited number of extension workers. The activities supported by civil society organizations (CSOs) are likely to include activities related to improving livelihoods, such as building the climate resilience of aquaculture, agriculture, and tourism activities.

21. Beyond complementing government's efforts through service delivery, civil society organizations and groups play a critical role as a watchdog and advocate of inclusive and accountable national and local policies and programmes, and as a conduit for voice of the most vulnerable and disenfranchised groups. However, CSOs themselves are in need of capacity development in use of climate adaptation strategies and need sustained support. In providing support to civil society, PPCR would use one of the existing mechanisms and avoid setting up new structures.

Scope of Technical Assistance

22. The scope of the technical assistance would include: (i) needs assessment of current capacities of communities and civil society to deliver the required services and develop climate resilience strategies; (ii) survey based assessment of current levels of awareness and the status of knowledge and knowledge management; (iii) review and assessment of the existing mechanisms for provision of support to civil society by development partners and the government; (iv) workshops and consultations with relevant stakeholders to keep them abreast of findings and recommendations as the work unfolds; and (v) a comprehensive proposal to address

the constraints in capacities and of communities and civil society together with the recommendations for appropriate implementation modalities.

Outline Terms of Reference

23. The Terms of Reference of this TA include:

A. Survey based assessment of current capacities of communities and civil society to deliver the required services and develop climate resilience strategies to include:

- (i) A capacity building needs assessment based on targeted survey of civil society stakeholders at various levels including the self-assessment as well as one-on-one interviews of selected persons and experts to determine capacity gaps that would need to be overcome if the mainstreaming of climate change issues in national and local planning was to be advanced further (wherever possible, the assessment would also build on the existing data); and
- (ii) Survey of select communities to assess their level of capacity to develop climate resilience strategies and implement community-based adaptation approaches.

B. Survey based assessment of current status of awareness about climate change and climate resilience strategies and the knowledge management related to climate change to include:

- (i) Survey of select communities to assess their level of awareness about climate resilience strategies and implement community-based adaptation approaches (this task can be combined with A(ii) above); and
- (ii) An assessment of climate change data and information needs and the appropriate strategy and modalities for dissemination of these to different groups in the country with the aim of raising awareness about climate change issues among the general public. The assessment would include taking stock of the current status of research and studies aimed at (a) enhancing resilience to climate change; (b) mainstreaming climate change in development policy and planning and identification gaps in availability and access to current knowledge products; and (c) identification of gaps, challenges and constraints in the development and dissemination of knowledge products.

C. A comprehensive review and assessment of the existing mechanisms for provision of support to civil society by development partners and the government. The review to look at: (i) scope and nature of the mechanisms and the type of support that is being provided to civil society (e.g. capacity building support, grant-making, technical assistance, networking support, etc); (ii) institutional and operational arrangements;

(iii) monitoring, and reporting requirements; (iv) governance structure of the proposed civil society facility; (v) linkages with other key climate change initiatives in Samoa; and (v) opportunities for collaboration and value addition between civil society and the government in relation to the PPCR focus areas.

D. Based on the above assessment and analyses, development of a comprehensive proposal to address the constraints in capacities and of communities and civil society together with the recommendations for appropriate implementation modalities, inputs needed and estimated costs of implementation to ensure that capacity of civil society to contribute to the climate resilience agenda in the country is strengthened and the communities are more aware and better equipped to adapt to climate change challenges; and

E. Workshops would be held at regular intervals to discuss the findings and secure feedback on conclusions and options to address climate change challenges and disseminate information and knowledge products to relevant stakeholders.

Outputs:

24. The outputs of this TA will include:

- (i) Results of survey based assessment of current capacities of civil society and communities;
- (ii) Results of survey based assessment of current levels of awareness and the status of knowledge and knowledge management;
- (iii) Findings of the review and assessment of the existing mechanisms for provision of support to civil society by development partners and the government;
- (iv) Proceedings of workshops and consultations; and
- (v) A comprehensive proposal to address the constraints in capacities and of communities and civil society together with the recommendations for appropriate implementation modalities.

Implementation Arrangements

25. The TA will be executed by the World Bank in collaboration with MNRE. There would be a need for appropriately qualified international and national experts to undertake the tasks outlined above and make appropriate recommendations.

Costs	
<u>Cost categories</u>	<u>Estimated</u>
<u>cost (US\$)</u>	
Consultants (national and international)	30,000
Workshops	10,000
Total cost	40,000

D. Understanding Gender Differentiated Impacts of Climate Change in Samoa

Rationale

26. Experiences shared from a number of Pacific island countries show that women, and their families and communities, are undergoing increasing hardships in their daily lives as a result of climate change impacts on agriculture, land availability, water resources, fishing, mining and other sectors. Women are affected differently from men, and often more severely, by climate change and associated natural disasters such as floods, droughts, cyclones and storms. This is largely because men and women are bound by distinct socio-economic roles and responsibilities that give rise to differences in vulnerability and ability to cope with these climate change consequences. As a result, vulnerable groups – especially poor women – are likely to be faced with problems such as food insecurity, loss of livelihood, hardships due to environmental degradation that lead to displacement and a host of other potentially devastating economic and social consequences.

27. Gender perspectives on climate change, in terms of agriculture, fisheries and food and water security in different ecosystems should be considered while developing recommendations and strategies for how communities can adapt to climate change and build resilience over the long-, medium- and short-terms. Understanding how division of labor and differences in social and economic status of men and women affect their vulnerability to climate change, will improve actions taken to reduce this vulnerability and any unintended biases in measures to increase community resilience. While much has been said about exacerbated impacts of climate change on women in the Pacific, there remain significant analytical gaps for Samoa-specific information. In this context, it is proposed to carry out a study of gender differentiated impacts of climate change in Samoa and measures to further reduce the vulnerability of women and disadvantaged groups in Samoan society.

Scope of Work

28. Technical assistance will be provided to determine gender differentiated impacts of climate change in Samoa, and how these can be addressed through gender appropriate adaptation measures, especially at the community level. The study is likely to look at what resources women and men in Samoa have lost due to climate change as currently manifested and to analyze essential strategies for coping and adapting to these changes in Samoan society. The importance of including coping and adaptation capacities in an analysis of differentiated vulnerability becomes evident when considering natural hazard experience in the world where different social groups are affected in different ways, even though they may experience the same hazard, or the same combination of hazards. Understanding gendered divisions of

labor in Samoa will assist in providing more in-depth understanding of community perspectives on changes to climate and the environment. It will also provide a useful entry point for harnessing the specialised knowledge held by women and men in developing strategies for adapting to climate change. A detailed methodology, research questions, sample and geographic focus area will be determined during the study preparation. The findings of the study will be integrated in PPCR activities and disseminated to relevant civil society organizations (CSOs). The study will also be shared with the Ministry of Women and Community and Social Development with the aim to mainstream the responses to specific gender differentiated impacts across sectors and government programmes.

Outline Terms of Reference

29. The Terms of Reference for this TA include:

- A. Preparation of the inception report with detailed methodology, research questions, sample and geographic focus area.
- B. An assessment of gender differentiated impacts of climate change in Samoa focusing on specific geographic areas and type of impacts, taking into account gender divisions of labor and access to capital;
- C. Use of qualitative research techniques guided by a combination of gender analysis tools to carry out the assessment. The techniques may include participatory rural appraisal in the form of focus group discussions, role play, life histories and key informant interviews. Through these techniques, primary data would be collected to understand the differences in gender roles, activities, needs, and opportunities in the context of climate change.
- D. Based on the findings of the research, a comprehensive proposal to mainstream gender dimensions in development planning and programming would be prepared. The proposal, among other things, would include (a) measures that would result in enhanced institutional capacities, both in the public and private sectors; (b) measures to be incorporated into the investment projects supported by PPCR; and (c) recommendations regarding training workshops and seminars to enhance awareness;
- E. Development of a monitoring framework for the actions proposed for mainstreaming gender in development planning and programming.

Outputs

30. The outputs of this TA will include:

- (i) Inception report with proposed methodology,

(ii) Commissioned study on gender differentiated impacts of climate change in Samoa focusing on specific geographic area and type of impacts;

(ii) Based on the above, development of a comprehensive proposal to mainstream gender dimensions in development planning and programming. The proposal, among other things, would include (a) measures that would result in enhanced institutional capacities, both in public sector; (b) measures to be incorporated in the investment projects supported by PPCR; and (c) recommendations regarding training workshops and seminars as the means to enhance awareness;

(vi) A Monitoring Framework including, among other things, reportable verifiable and measurable indicators, risks and assumptions, and activities; and

(v) Publication and dissemination of the study, including an in-country workshop for the launch of the study with all relevant stakeholders.

Implementation Arrangements

31. The TA will be executed by the World Bank in close collaboration and coordination with the Ministry for Women and Community and Social Development. There will be a need for appropriately qualified international and national experts to undertake the tasks outlined above and make appropriate recommendations.

Costs

<u>Cost categories</u> <u>cost (US\$)</u>	<u>Estimated</u>
Consultants (national and international)	35,000
Workshop	10,000
Publication and dissemination	5,000
Total cost	50,000

E. Developing a Practical Planning and Implementation Framework that Builds on Existing Plans to Manage Climate-Related Risks and in the Coastal Zone

Background

32. The Pilot Programme for Climate Resilience (PPCR) is the first active Programme under the Strategic Climate Fund (SCF) of the Climate Investment Funds (CIF). The PPCR will be transformational by piloting and demonstrating approaches for the integration of climate risk and climate resilience into core development policies, planning, budgeting and implementation, and strengthening related capacities at the national and regional levels. The programme aims to provide incentives for scaled-up action and transformational change in integrating climate resilience considerations in the participating country's development strategies and programmes and on other ongoing initiatives; and enable learning-by-doing and sharing of lessons and good practice at country, regional and global levels.

33. The PPCR is implemented in two phases. Phase 1 includes preparation of a Strategic Programme for Climate Resilience (SPCR). Preparing the SPCR involves: (i) a stocktaking of the country situation, including progress in considering climate resilience in development planning and investments and in other ongoing and planned programmes; (ii) an assessment of the country's readiness to accelerate this process with PPCR support; and (iii) defining gaps and needs to formulate the SPCR (analyses, consultations, essential immediate capacity building, and other processes). The SPCR is implemented in Phase 2.

34. Samoa has been selected for participation in the PPCR as one of three pilot countries in a Pacific Regional Program, and nine countries worldwide as well as the Caribbean region. Samoa's acceptance of this offer to participate was confirmed by the PPCR Sub-committee in September 2009. Samoa submitted the Phase 1 proposal in August, 2010. The proposal was approved on October 15, 2010 and Phase 1 implementation began in November. This included preparation of the SPCR, which in Samoa is referred to as the Climate Resilience Investment Programme (CRIP). The CRIP was submitted on February 18, 2011.

35. In addition to help in establishing a National Climate Change Adaptation Fund, the CRIP will support two investment projects. The first is an infrastructure project designed to upgrade the highly vulnerable North Coast Road between Apia and the Airport to a standard that will withstand projected flooding and other physical stress associated with rising sea levels and increased hurricane intensity over the next 20 years. The second project focuses on enhancing the climate resilience of coastal communities and natural resources as interdependent social and ecological systems—using an ecosystem-based approach—to render them better able to cope with the

inevitable impacts of climate change. In this project, a combination of “hard and soft engineering” solutions will be introduced which speak to the need for investments in both hard infrastructure where the physical dynamics of the system and adaptation timeframes constrain other options, as well as greener solutions which work with nature to enhance the innate resilience of natural systems—i.e, their ability to rebound from disturbance events—so that vital ecosystem services in the form of food, clean water, physical protection and other supporting processes, continue to be delivered. This confers both economic and social resilience on a community and is likely to be more cost effective and sustainable in the long term. To the extent that such interventions also improve human welfare in the short time, they may be viewed as no regrets solutions.

The Technical Assistance: *Developing a practical planning and implementation framework for the adoption of appropriate hard and soft engineering solutions to climate resilience in the Coastal Zone*

36. Samoa’s District Coastal Infrastructure Management Plans, prepared between 2002-2006 under the SIAM I and II projects, include both hard and soft interventions (see Table 3 on page 43 above). Reviewing and updating these plans to ensure that they are still relevant and reflect the best available knowledge and practice to reduce community vulnerability to climate related hazards, identifying ecosystem-based approaches that go beyond the CIM plans and may provide alternative or complementary solutions to increasing climate resilience, and prioritizing these for implementation under the project will be the focus of Technical Assistance to be provided during the preparation stage. In addition, identifying information needs in the form of climate change monitoring data, facilitating their access from third parties or collection in the field during the course of implementation, and designing an adequate Monitoring and Evaluation framework for the project will be included in the TA during preparation. Under the Planning and Urban Management Act, Sustainable Management Plans are also expected to be prepared for each district. The TA would take these into account in revising the CIM Plans.

37. The technical assistance will be provided by different entities (firms and individuals), as appropriate, including teams of researchers and practitioners, engineering firms, NGOs and other groups with on the ground experience in delivering the kinds of solutions described above.

38. The technical assistance teams will focus on (i) increasing the relevance and effectiveness of Coastal Infrastructure Management plans in response to climate change in 16 Districts in Samoa, including the 8 districts adjacent to the Apia-Airport Road to be upgraded in Investment Project 1; and (ii) determining an appropriate mix of hard vs soft infrastructure (grey vs green) approaches to decreasing the

vulnerability of communities and associated natural resources to climate related impacts.

39. Specifically the technical assistance teams will undertake the following tasks:

- Review and update CIM Plans
 - Ensure relevance of proposed interventions to address current threats based on new information; ensure that seawalls and other proposed hard infrastructure (e.g., associated with retrofitting first response facilities to category 5 cyclones and securing essential utilities) are properly designed
 - Screen out maladaptive infrastructure (including seawalls, breakwaters and groins that may exacerbate beach erosion downstream of the hardened coastline);
- Identify and consider alternative options, including ecosystem-based approaches, which may replace or complement hard infrastructure solutions. These may include living shorelines (reforestation/revegetation of eroding shorelines between the high-tide line and essential infrastructure which cannot be set back, such as the airport road, hospitals, schools, etc.) and recovery of coastal habitat for mangrove replanting and restoration through voluntary setbacks and retreat of community and assets landward of the hazard line
 - Incorporate best available information/good practice in the design of most viable options
 - Cost out options; assess cost/benefit ratio taking into account environmental and social impacts and sustainability
- Based on the above, develop a typology of hard and soft solutions—or hybrid solutions—along a continuum that includes (i) reducing vulnerability of target groups and infrastructure; (ii) cost-effectiveness; (iii) cultural acceptability, (iv) sustainability and , (v) timeline for achieving resilience
 - Consult with communities to discuss options and prioritize those for implementation in light of budget, land requirements and other constraints and identify modalities for execution (including in-kind contributions of labor and materials by communities)
- Assess and advise on steps to improve Disaster Preparedness. The task will:
 - i) identify delivery systems of basic services (potable water, power, emergency communications) that should be targeted for survival after extreme weather events; ii) identify shielding techniques that could be used for each service; iii) provide estimate of installation costs and well as operation and maintenance and training requirements.
 - Assess adequacy of early warning systems and safe havens for retreat during a disaster event; recommend minimum measures to secure these

safe havens, ensuring access to them by women, children and other disadvantaged groups (e.g., infirmed and elderly), and provisioning them for use in extreme weather events.

- Identify data needs and monitoring activities to: (i) detect climate change impacts in key natural resources and ecosystems: (e.g., SLR and beach erosion; saltwater intrusion in agricultural lands and salinization of aquifers; bleaching and disease on coral reefs, structural damage and declines in live coral cover and accretion rates due to increased storm intensity and ocean acidification); (ii) and (iii) facilitate acquisition of data sets from third parties prior to implementation, and (iv) design protocols and identify equipment needs for strategic field monitoring and data collection during project implementation.
 - An example of such a task would be to support efforts at the Water Resources Division (WRD) for the scoping, design, location and quantification of operation and maintenance costs of a network of conductivity probes for coastal artesian wells. Reportedly these resources provide 30-40% of water withdrawals in the country. To complement this assessment of groundwater quality, support the review of seismic surveys already done in the country and provide guidance on any additional efforts that may be required to assess the location and volume of freshwater aquifers along the coastal zone, identifying additional techniques and resources to complement existing data.
- Work with the Fisheries Division of Marine Conservation and Monitoring to assess capacity building needs in expanding their current monitoring of the health of Samoan coral reefs and reef fish communities, and the adequacy of current management interventions relative to existing stressors and anticipated threats from climate change.
- Review and prioritize those measures which should be scaled up to relieve current pressure on fragile coral reefs and over-exploited reef fish, and enhance the ability of these systems to deal with both chronic and acute impacts of climate change and increasing levels of atmospheric CO₂.
- Identify suitable alternatives to sand mining and the sourcing of construction material in Samoa, to reduce beach erosion. As a first option, consider the feasibility of using crushers to breakdown volcanic rock (such as that used for seawalls) retrieved from farmland, or other quarry material that could be used to replace sand as construction material.

Deliverables

40. The technical assistance teams will provide the following deliverables: (i) a framework for screening CIM plans in the 16 selected districts to come up with

appropriate, cost-effective (relative to the resilience target), and timely options for ways to reduce vulnerability to and risk from anticipated climate related impacts under component 1 of the project; (ii) a typology of grey and green solutions (as described above in bullet point 3) that include but are not limited to those needs identified in CIM plans. These options should be considered by and vetted with key stakeholders at the local and national level to prioritize interventions for piloting and demonstration under the project of ; (iii) a report outlining the information needs, data acquisition sources and field monitoring activities that will be required to support interventions under this project and feed into other initiatives to reduce vulnerability of communities and increase their climate resilience.

Implementation

41. The technical assistance will be executed by MNRE.

Risks and Their Management

42. No risks related to developing a planning and implementation framework for the delivery of services described above have been identified.

Results

43. The key results expected area practical planning and implementation framework for the identification of appropriate hard and soft engineering solutions to reducing vulnerability to climate risks in the Coastal Zone; a greater awareness among coastal communities about management measures they can take to increase the climate resilience of coastal ecosystems and thereby enhance their own resilience to climate change; a jump start on the information and capacity required to design and implement the project.

Duration and Cost

44. The technical assistance will be provided over a period of 8 months for a total estimated cost of USD 310,000.

Annex 9

Results Framework for PPCR-Samoa

1. Monitoring of Phase 1 implementation has an input and output focus. Phase 1 builds capacity and develops an enabling framework for climate risk management in Samoa. It is therefore appropriate that the monitoring and evaluation plan for Phase 1 is input and output focussed. The preparatory activities are essential to effective delivery of tangible outcomes in Phase 2. The monitoring and evaluation framework used for Phase 1 is shown in Table 1.

Table 1

Monitoring and Evaluation Framework for Phase 1

Inputs	Indicator	Target
Project Oversight	Status of PPCR Steering Committee	Established at inception; Fulfilling its TOR within 1 month
Project Management	Status of Project Management Unit	Established at inception Fulfilling its TOR within 1 month
Work Plan	Status of work plan	Finalised and approved within one week of inception
Budget	Status of Phase 1 budget	Finalised and approved within one month prior to inception
Funding	Actual disbursements, as in budget	Disbursements on schedule
Outputs	Indicator	Target
Climate Risk Data	Availability of good practice climate risk data for key vulnerable sectors and areas	80% by end of Phase 1
Institutional Analysis	Multi-stakeholder consensus on institutional strengthening	Identified needs for institutional strengthening addressed by end of Phase 1
Social Analysis	Multi-stakeholder consensus on equitable participation	Identified needs to ensure equitable participation addressed by end of Phase 1
Mainstreaming	CC considerations included in policies/plans	By end of Phase 1 80% of policies and plans reflect CC considerations
Enhanced Capacity	Multi-stakeholder consensus on improved knowledge management	Actions to improve knowledge management implemented by the end of Phase 1
	Outreach products disseminated	80% of planned outreach products disseminated by the end of Phase 1
Programming Document	Status of the National Climate Change Programme	Awaiting endorsement by end of Phase 1
Environ. and Social Assessment	Status of CRIP with respect to environmental and social safeguards	CRIP fully compliant with environmental and social safeguards by final draft stage
CRIP	Status of the CRIP	Awaiting approval by end of Phase 1

2. The monitoring and evaluation of Phase 2 will be predominantly outcome focussed, including documenting and sharing lessons learned and success stories of adaptation up-scaling and transformational change. The results framework is shown in Table 1.

Table 1

Results Framework for Samoa's PPCR

Scope and Time Frame	Outcomes and Impacts		Performance Indicators	Performance Targets
Global - PPCR Final Outcome (10 – 15 years)	All economic and social development is climate resilient		<ul style="list-style-type: none"> ▪ Global MDG Indicators ▪ People killed annually by climate-related disasters (as % of population) ▪ People affected annually by climate-related disasters (as % of population) ▪ Economic losses due to climate-related disasters (as % of GDP) 	<ul style="list-style-type: none"> ▪ Global MDG progress unaffected by weather and climate ▪ Clear downward trend in all three percentages
Samoa – PPCR Transformational Impact (10 – 15 years)	Lives and livelihoods are climate resilient (especially for those currently most vulnerable)	Transformative social and economic development, with increased resilience to climate change, including extremes and variability	<ul style="list-style-type: none"> ▪ National MDG Indicators ▪ People killed annually by climate-related disasters (as % of population) ▪ People affected annually by climate-related disasters (as % of population) ▪ Economic losses due to climate-related disasters (as % of GDP) 	<ul style="list-style-type: none"> ▪ National MDG progress unaffected by weather and climate ▪ Clear downward trend in all three percentages
Regional – PPCR Catalytic Replication Outcomes (10 – 15 years)	Improved knowledge and practices in climate risk management, based on good practices and lessons learned transferred through the PPCR	Enhanced climate resilience in social, economic and environment sectors as a result if using programmatic approaches	<ul style="list-style-type: none"> ▪ Pacific region MDG Indicators ▪ People killed annually by climate-related disasters (as % of population) ▪ People affected annually by 	<ul style="list-style-type: none"> ▪ Pacific region MDG progress unaffected by weather and climate ▪ Clear downward trend in all three percentages

Scope and Time Frame	Outcomes and Impacts		Performance Indicators	Performance Targets
	Pacific regional project and other mechanisms	to enhancing climate resilience,	climate-related disasters (as % of population) <ul style="list-style-type: none"> ▪ Economic losses due to climate-related disasters (as % of GDP) 	
Samoa – PPCR Catalytic Replication Outcomes (10 – 15 years)	Programmatic approaches to enhancing climate resilience, based on formalised participatory approaches and established mechanisms for engaging civil society and the private sector in comprehensive climate resilient development	Scaled up climate smart investment in agriculture, water, coastal, health, education and infrastructure sectors	<ul style="list-style-type: none"> ▪ Value of programme-based adaptation investment projects (as % of total investment in adaptation) ▪ Value of investments in each sector that include management of climate risks (as % of total investment for each sector) 	<ul style="list-style-type: none"> ▪ Clear upward trends in all seven percentages
Samoa – PPCR Projects/Programmes Outcomes (2 – 7 years)	Strengthened enabling environment for climate risk management, including access to information and improved knowledge on weather and climate related risks, and how best to manage them	Increased capacity of Government, civil society and the private sector to manage climate risks, including through coordinated investment projects	<ul style="list-style-type: none"> ▪ Number of climate-sensitive investment initiatives using state-of-the-art climate information and climate risk management approaches (as % of total number of investment initiatives) 	<ul style="list-style-type: none"> ▪ Clear upward trend in the percentage
Samoa – PPCR Projects/Programmes Activities (1 – 7 years)	PPCR activities designed to add value to those funded by Government, development partners and the private sector	Increased resilience of the West Coast Road infrastructure to extreme weather effects Improved transit conditions for all road users Reduced routine and periodic maintenance costs	<ul style="list-style-type: none"> ▪ Number of road closures or diversions ▪ Number of accidents involving injury or death ▪ Annual per kilometre maintenance costs 	<ul style="list-style-type: none"> ▪ Clear downward trends in the number of road closures or diversions, in the number of accidents involving injury or death, and in annual per kilometre maintenance costs

Scope and Time Frame	Outcomes and Impacts		Performance Indicators	Performance Targets
		<p>Reduced vulnerability to and enhance the capacity of natural systems and coastal communities to recover from impacts (chronic and acute) associated with climate change</p>	<ul style="list-style-type: none"> ▪ Time required for natural ecosystems/resources to return to pre-disturbance state following a climate shock or climate-related event ▪ Degree to which key ecosystem services restored or enhanced over time ▪ Effort required/ability of communities to cope with chronic, climate-related disturbances ▪ Ability of communities to recover from economic and environmental shocks associated with climate change ▪ Communities demonstrate awareness of habitat linkages (both upstream/downstream) and across land/sea interface in climate resilient planning and use of resources 	<ul style="list-style-type: none"> ▪ Clear downward trend in time required for natural ecosystems/resources to return to pre-disturbance state following a climate shock or climate-related event ▪ Clear upward trend in restoration or enhancement of key ecosystem services restored or enhanced over time ▪ Clear decrease in effort required/ability of communities to cope with chronic, climate-related disturbances ▪ Clear increase in ability of communities to recover from economic and environmental shocks associated with climate change

Scope and Time Frame	Outcomes and Impacts		Performance Indicators	Performance Targets
				<ul style="list-style-type: none"> ▪ Clear increase in ability of communities to demonstrate awareness of habitat linkages (both upstream/downstream) and across land/sea interface in climate resilient planning and use of resources
		Climate change adaptation trust fund for Samoa established	<ul style="list-style-type: none"> ▪ Status of trust fund 	<ul style="list-style-type: none"> ▪ Trust fund established, and ready for contributions from development assistance partners
		Vulnerability assessment of the primary road network	<ul style="list-style-type: none"> ▪ Status of the climate vulnerability index for Samoa's primary road network ▪ Status of costed action plan to implement a prioritised resilience program 	<ul style="list-style-type: none"> ▪ Climate vulnerability index for Samoa's primary road network prepared ▪ Costed action plan to implement a prioritised resilience programme prepared
		A practical planning and implementation framework that builds on existing plans to manage climate-related	<ul style="list-style-type: none"> ▪ Status and use of Framework ▪ Status of the study and its use 	<ul style="list-style-type: none"> ▪ Framework prepared and used in Investment Project 2

Scope and Time Frame	Outcomes and Impacts		Performance Indicators	Performance Targets
		risks and facilitates a an ecosystem-based approach to adaptation is developed, and suitable mixes of “soft” and “hard” interventions to enhance the climate resilience of coastal resources and communities in different parts of Samoa are identified		<ul style="list-style-type: none"> ▪ The results of a study to determine suitable mixes of “soft” and “hard” interventions are used to inform decisions on the nature of the specific interventions made in Investment Project 2
		The gender-differentiated impacts of climate change in Samoa are identified, and a gender-mainstreaming framework and guidance for implementing gender-aware adaptation measures in PPCR-Samoa, especially at community level, is prepared	<ul style="list-style-type: none"> ▪ Status of the gender-mainstreaming framework and the use of guidance 	<ul style="list-style-type: none"> ▪ Gender-mainstreaming framework and guidance used when building the capacity of civil society, including the private sector, and when undertaking specific interventions as part of Investment Project 2