



**Project Title:** Adaptation to Climate Change in the Coastal Zone in Vanuatu

**UNDAF Outcome(s):** Outcome 1.1: Improved resilience of Pacific Island Countries and Territories (PICTs), with particular focus on communities, through integrated implementation of sustainable environmental management, climate change adaptation/mitigation, and disaster risk management.

**UNDP Environment and Sustainable Development Primary Corporate Outcome:**

Growth is inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded (Strategic Plan 2014-2017, Outcome 1)

**UNDP Secondary Corporate Outcome:**

Countries are able to reduce the likelihood of conflict and lower the risk of natural disasters, including from climate change (Strategic Plan 2014-2017, Outcome 5)

**Expected Country Program Outcomes:**

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

**Executing Entity/Implementing Partner:** Ministry for Climate Change Adaptation, Meteorology, Geo-hazards, Environment, Energy and Disaster Management.

**Implementing Entity/Responsible Partners:** Ministry of Agriculture, Fisheries, Forestry and Biosecurity, Department of Local Authorities (DLA) of the Ministry of Internal Affairs, Public Works Department of Ministry of Infrastructure and Public Utilities, and the Ministry of Finance and Economic Management.

Programme Period:	5 years	<b>Total resources required:</b>	<b>\$ 38,927,253</b>
Atlas Award ID:	00082063	<b>Total allocated resources:</b>	<b>\$ 38,927,253</b>
Project ID:	00091141	▪ <b>LDCF (GEF):</b>	<b>\$ 8,030,000</b>
PIMS #	4866	▪ <b>Co-financing:</b>	
Start date:	July 2014	○ <b>Government</b>	<b>\$21,170,341</b>
End Date	June 2018	○ <b>UNDP</b>	<b>\$ 2,731,344</b>
Management Arrangements:	NIM	○ <b>Other</b>	<b>\$ 6,995,568</b>
PAC Meeting Date:	May 2014	<b>Total</b>	<b>\$ 30,897,253</b>

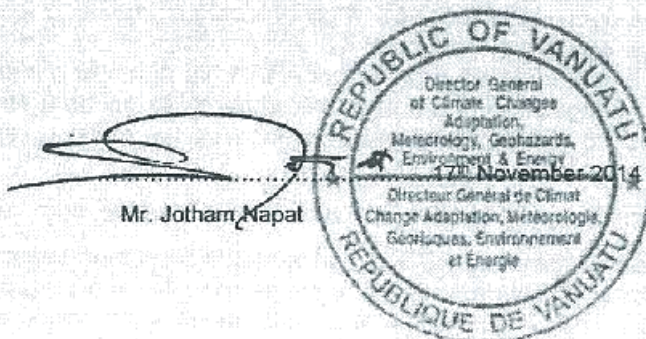
<sup>1</sup> For UNDP supported GEF funded projects as this includes GEF-specific requirements

Agreed by (Government): Director General – Prime Minister's Office



.....17<sup>th</sup> November 2014  
Mr. Johnson Naviti Marakipule.

Agreed by (Executing Entity/Implementing Partner): Director General of Climate Change Adaptation, Meteorology, Geohazards, Environment and Energy



Mr. Jotham Napat

Agreed by (UNDP): UNDP Resident Representative

.....12<sup>th</sup> November 2014  
Ms Osnat Lubrani

### Brief Description

Vanuatu ranks as the world's most vulnerable country due to its high exposure to natural disasters, scattered island geography, narrow economic base, inadequate communication and transportation networks, and limited capacity to cope with disasters including those caused or exacerbated by the effects of climate change. Annually Vanuatu is impacted by a number of cyclones, which are expected to become more intense under current climatic projections, with coastal communities and ecosystems being most vulnerable and impacted by these events. Vanuatu will be heavily impacted by climate change with future scenarios projecting increased temperatures, sea-level rise, and increased severity of cyclones, increased ocean temperatures and ocean acidification. In addition, an increased likelihood of an increase in the frequency of El Niño events will present its own long-term seasonal challenges. These challenges, combined with rapid population growth spread over 80 islands, an agricultural and coastal-based economy facing acute medium-term challenges and inadequate delivery of government services, especially in remote areas will continue to limit the potential for long-term sustainable development and achievement of the Millennium Development Goals.

The Government of Vanuatu has been proactive in global and regional dialogues on climate change and finalised its National Adaptation Programme of Action (NAPA) in 2007. The project will explicitly address three of eleven priorities identified in the NAPA including: 1) community-based marine resource management, 2) integrated coastal zone management, and 3) mainstreaming climate change into policy and national planning processes. The NAPA places particular emphasis on the need for community-based marine resource management, embracing both traditional and modern practices and enhancing the resilience of vulnerable coastal communities. To address these priorities, the project will focus on five of the adaptation options outlined in the NAPA including: i) development of provincial / local adaptation and ICM plans, ii) climate proofing of infrastructure design and development planning, iii) development of an efficient early warning system, iv) awareness raising and capacity building, and v) coastal re-vegetation and rehabilitation.

Project activities are organized according to four inter-related components, as summarized below:

**Component 1:** Targeted community approaches to CC adaptation responsive to stakeholder needs and priorities. These interventions will address major environmental and associated socio-economic problems facing coastal communities from climate change in areas such as land degradation, biodiversity loss, and reef destruction which severely undermine prospects for sustainable development, including food security. The project will also build on and enhance CC adaptation initiatives through climate-proofing of infrastructure as needed. All infrastructure improvements will encourage re-vegetation to mitigate soil loss, improve the stability of the ground, and provide enhanced general ecosystem resilience. To further enhance the ability of coastal ecosystem to withstand impacts of climate change, the project will also identify how non-climate human induced stressors on the coastal zone can be reduced.

**Component 2:** Support information and early warning systems on coastal hazards to address the current lack of systematic analysis and prediction of climate-related events. The Vanuatu Meteorological and Geohazards Department (VMGD) has experienced problems in terms of processing historical data, maintaining high observation standards and further developing services due to funding, training and staffing constraints. Although people living near town sites have access to climate information, people living in remote areas including outer islands are seriously affected by lack of weather information. The project design will investigate the potential for automated weather stations and monitoring of coastal flooding through river stream gauges.

**Component 3:** Strengthen climate change governance by building upon the Government of Vanuatu's commitment to mainstreaming climate change into national planning and development plans. Climate governance is currently hindered by lack of expertise, competing demands, and lack of coordination between different policy sectors as well as between national, provincial and local governments. Capacity building activities will target key staff of national, provincial and local level governments, as well as community leaders and residents where the project will be implemented.

**Component 4:** Enhancing knowledge of environment issues is very important given the generally low level of understanding of most of the population about climate change issues and impacts. The NAPA emphasizes that awareness raising and education are core issues that should be an integral part of any proposed CC adaptation projects. The lack of human, financial, and technical resources often constrains information sharing, education, and knowledge generation on climate change. Knowledge management activities need to take into account Vanuatu's high literacy rate (94% in 2009) and limited access to the internet (middle to bottom in global rankings). The project will also document lessons learned, especially those that might be useful for replication in other sites and make these accessible to stakeholders.

## Table of Contents

Annexes .....	5
List of Acronyms.....	6
1 Situation analysis.....	8
1.1 Introduction .....	8
1.2 Context .....	8
1.2.1 Country context .....	8
1.2.2 Climate change context .....	9
1.2.3 Governance context .....	11
1.3 Continuous challenges, root causes and impacts .....	14
1.3.1 Land use, eutrophication and sedimentation in coastal and upland areas .....	15
1.3.2 Coastal erosion.....	15
1.3.3 Marine resource exploitation and marine resource degradation .....	16
1.3.4 Roads related and public conveyance infrastructure .....	16
1.3.5 Pedestrian River Crossings and Walkways .....	18
1.3.6 Climate variation and change including extreme weather events .....	19
1.4 Long-term solution and barriers to achieving the solution .....	19
1.4.1 Barriers and solutions to climate change adaptation .....	19
1.5 Project Design Methodology .....	21
2 Strategy .....	27
2.1 Project rationale and policy conformity .....	27
2.2 Country ownership, eligibility and drivenness .....	27
2.3 Design principles and strategic considerations .....	29
2.3.1 Gender and social inclusion considerations .....	30
2.3.2 UNDP's Comparative Advantage .....	33
2.4 Project Objective, Outcomes and Outputs/activities .....	35
2.5 The 4 Components of V-CAP .....	35
2.5.1 Component 1: Integrated community approaches to climate change adaptation .....	35
2.5.2 Component 2: Information and early warning systems on coastal hazards .....	51
2.5.3 Component 3: Climate Change Governance .....	59
2.5.4 Component 4: Knowledge management .....	63
2.6 Key indicators, risks and assumptions .....	66
2.7 Cost-effectiveness .....	67
2.8 Sustainability.....	68
2.9 Replicability.....	69
2.9.1 Stakeholder engagement plan.....	69
2.10 Explain compliance with UNDP Safeguards Policies .....	70
3 Project Results Framework.....	72
4 Total budget and workplan .....	83
4.1 Budget notes.....	87
5 Management Arrangements .....	91
5.1 Project Management Structure and Responsibilities.....	91
6 Monitoring Framework and Evaluation .....	96
6.1 Monitoring and evaluation workplan and budget.....	98
6.2 <i>Communications and visibility requirements</i> .....	99
7 Legal Context - .....	100

## Annexes

Annex 1:	Current and future climate projections for Vanuatu
Annex 2:	Risk Pacific Catastrophe Risk Assessment and Financing Initiative - Vanuatu Country Profile
Annex 3:	Inception workshop report
Annex 4:	Stakeholder consultation log
Annex 5:	Site selection process
Annex 6:	Site summaries – all sites
Annex 7:	Individual sites profiles – 6 sites
Annex 8:	Gender and Social inclusions strategy
Annex 9:	Risk Analysis and log
Annex 10:	Stakeholder Involvement Plan
Annex 11:	Environmental and social assessment
Annex 12:	Specific terms of Reference
Annex 13:	Capacity building strategy
Annex 14:	Communication Strategy
Annex 15:	CC Adaptation Tracking Tool AMAT
Annex 16:	Proposed timeline



## List of Acronyms

ALM	Adaptation Learning Mechanism
APR	Annual Project Report
AusAID	Australian Agency for International Development
AWP	Annual Work Plan
AWS	Automatic Weather Stations
CAE	Country Assistance Evaluation
CBOs	Community-Based Organizations
CCA	Climate change adaption
CDC	Community Disaster Committee
CO	Country Office
CRP	Comprehensive Reform Program
CSOs	Civil Society Organizations
DEPC	Department of Environmental Protection and Conservation (Ministry for Climate Change Adaptation, Meteorology, Geo-hazards, Environment, Energy and Disaster Management)
DLA	Department of Local Authorities
DMO	Disaster Management Office
DoF	Department of Fisheries (Ministry of Agriculture, Quarantine, Forestry and Fisheries - MAGFF)
DRD	Department of Rural Development
DSM	Department for Strategic Management
EA	Executing Agency
EEZ	Exclusive Economic Zone
ENSO	El Nino Southern Oscillation
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EU	European Union
EWS	Early Warning System
FAD	Fish Aggregating Device
GEF	Global Environment Facility
GOV	Government of Vanuatu
IA	Implementing Agency
ICZM	Integrated Coastal Zone Management
INC	Initial National Communication
IPCC	Inter-governmental Panel on Climate Change
IRCCNH	Increasing Resilience to Climate Change and Natural Hazards
IWRM	Integrated Water Resource Management
JICA	Japan International Cooperation Agency
LDCF	Least Developed Country Fund
LDCs	Least Developed Countries
LMMA	(Locally) Marine Managed Area
M&E	Monitoring & Evaluation
MAGFF	Ministry of Agriculture, Quarantine, Forestry and Fisheries
MCCAMGEEDM	Ministry for Climate Change Adaptation, Meteorology, Geo-hazards, Environment, Energy and Disaster Management.
MDG	Millennium Development Goals
MESCAL	Mangrove Ecosystems for Climate Change Adaptation and Livelihoods Project
MFEM	Ministry of Finance and Economic Management
MIPU	Ministry of Infrastructure and Public Utilities
MMA	Marine Managed Area
MPA	Marine Protected Area
MWCT	Ministry of Works Communications and Transport

NAB	National Advisory Board on Climate Change and Disaster Risk Reduction
NAPA	National Adaptation Program of Action
NBSAP	National Report on National Biodiversity Strategy and Action Plan
NCCAS	National Climate Change Adaptation Strategy
NDMP	National Disaster Management Plan
NGOs	Non-Governmental Organizations
NICZMF	National Integrated Coastal Zone Management Framework
PAA	Priorities and Action Agenda 2006 – 2015
PCCSP	Pacific Climate Change Science Program (of the Australian Government)
PEQD	Pacific Equatorial Divergence
PICTs	Pacific Island Countries and Territories
PIR	Project Implementation Review
PIU	Project Implementation Unit proposed for V-CAP
PMU	Project Management Unit of the MCCAMGEDM
PPG	Project Preparation Grant
PRRP	Pacific Risk Resilience Project
PWD	Public Works Department (Ministry of Public Works and Infrastructure)
SGP	Small Grants Program
SFM	Sustainable Forest Management
SLM	Sustainable Land Management
SNC	Second National Communication
SPC	Secretariat of the Pacific Communities
SPCZ	South Pacific Convergence Zone
SST	Sea surface temperature
TPR	Tripartite Review
TTPR	Terminal Tripartite Review
UNDAF	United Nations Development Assistance Framework
UNDP	United National Development Program
UNFCCC	United Nations Framework Convention on Climate Change
USP	University of the South Pacific
V-CAN	Vanuatu Climate Adaptation Network
V-CAP	Adaptation to Climate Change in the Coastal Zone in Vanuatu (Vanuatu- Coastal Adaptation Project)
VANGO	Vanuatu Association of NGOs
VMGD	Vanuatu Meteorological and Geohazards Department
VTSSP	Vanuatu Transport Sector Support Program
WB	World Bank
WFOD	Weather Forecast and Observation Division – VMGD

# 1 Situation analysis

## 1.1 Introduction

1. The overall aim of the Adaptation to Climate Change in the Coastal Zone in Vanuatu Project (V-CAP) is:

To improve the resilience of the coastal zone in Vanuatu to the impacts of climate change in order to sustain livelihoods, food production and preserve/improve the quality of life in targeted vulnerable areas.

2. To achieve this aim, V-CAP will implement a range of interventions to build community resilience to climate change to:

- a) Improve the adaptive capacity of communities to CC impacts through integrated approaches and community actions in the restoration of productive coastal ecosystems and implementation of applicable concrete adaptation measures;
- b) Reduce exposure of coastal dwellers to climate hazards and risks through the installation and maintenance of an early warning system;
- c) Improve climate-related governance at the national, provincial and village levels to ensure sustainability and replication of successful climate change adaptation measures; and
- d) Increase awareness about CC perils in general and adaptation in the coastal zone in particular, to increase resilience of the general population to climate change impacts.

3. A key element in the implementation of V-CAP will be the delivery of support to local rural isolated island communities through their Area Councils to build their resilience to climate change in all six (6) provinces in Vanuatu. This will initially focus on 1-2 Area Councils per province with the benefits of the interventions being available to a wider number of beneficiaries. Select of sites was based on a process including selection criteria, group consensus and dialogues with local communities as outlined in section 2.3 of this document. The PPG mission went to each of the proposed provinces and met with key agencies and communities.

## 1.2 Context

### 1.2.1 Country context

4. The Republic of Vanuatu comprises approximately 82 relatively small islands with distance of about 1,300 kilometers north to south between the outermost islands. It has a combined land area of 12,336 km<sup>2</sup> and a maritime exclusive economic zone (EEZ) of 680,000 km<sup>2</sup>. The population of approximately 234,000 people is spread over 68 inhabited islands; however the eight largest islands contribute 87% of the total land area. The remaining islands are small, often mountainous, with a small number of low -lying islands. The country lies between latitudes 13° and 21°S and longitudes 166° and 171°E.

5. According to the Commonwealth Vulnerability Index, Vanuatu ranks as the world's most vulnerable country due to its high exposure to natural disasters, scattered island geography, narrow economic base, inadequate communication and transportation networks, and limited capacity to cope with disasters including climate change<sup>23</sup>. Due to this high vulnerability, Vanuatu is still accorded UN-listed least developed country (LDC) status despite a per capita GDP above the LDC threshold<sup>4</sup>.

6. Like all small island nations, the coastal zone is the hub of economic activity in Vanuatu. The vast majority of the population is concentrated on the narrow strip of the coastal zone as most islands are volcanic with a mountainous terrain in the interior. About 80% of the population live in rural areas and engage in subsistence, rain-fed agriculture in the coastal zone. Coastal fisheries contribute significantly to food security, with the recent agriculture census<sup>5</sup> indicating increased fishing effort by many rural

---

2 <http://www.sids2014.org/content/documents/40Vanuatu-MSI-NAR2010.pdf>

3 Vanuatu Economic & Development Strategy Handbook, Ibp Usa, USA International Business Publications

4 [http://www.un.org/en/development/desa/policy/cdp/lcd/profile/vulnerability\\_profile\\_vanuatu.pdf](http://www.un.org/en/development/desa/policy/cdp/lcd/profile/vulnerability_profile_vanuatu.pdf)

5 Census of Agriculture, Census of Agriculture 2007—Vanuatu, Vanuatu National Statistics Office, Government of Vanuatu, [www.spc.int/prism/country/vu/stats](http://www.spc.int/prism/country/vu/stats)



communities. Yet many life-supporting coastal ecosystems are increasingly under stress from climate change and other human-induced pressures, including over-fishing.

7. The geography of Vanuatu creates significant challenges to infrastructure development and maintenance and the provision of basic social services, such as healthcare, education and early warning systems. For example most rural communication is through public radio broadcast. Telephone communications are concentrated on the larger, more inhabited islands with most small islands having only two or three telephone sets to serve the entire population. However on the larger islands there is increasing access to mobile phone services – while in the Torres Islands and other remote locations there is still no mobile telephone connection.

8. Due to the large north-south extent of the island chain, Vanuatu typically experiences a number of severe tropical cyclones during the summer months of December to March, and higher amounts of rain due to the influence of the South Pacific Convergence Zone (SPCZ). In addition, it suffers from anomalously long dry spells associated with the El Nino-Southern Oscillation (ENSO)-cool phase. Climate variability is one of the greatest challenges for Vanuatu.

9. In addition, Vanuatu is seismically active and there are frequent earthquakes and related seismic activity due to its location along the “Pacific Ring of Fire”, formed by the subduction of the Australian plate under the Pacific plate. There are a number of active volcanos on islands as well as undersea mounts that occasionally erupt. There have been reports over the last 20 years of tectonic activity with areas subsiding by up to one meter (Akham Island for instance) and also examples of relatively recent uplift.<sup>67</sup> In the last 500 years there are reports of entire islands being submerged<sup>8</sup>.

### 1.2.2 Climate change context

10. A robust assessment of potential climate changes in Vanuatu was recently undertaken by the Pacific Climate Change Science Program (PCCSP), led by the Australian Government in collaboration with the Vanuatu Meteorological and Geohazards Department (VMGD) of the Government of Vanuatu (see Annex 1). In addition, the Risk Governance Assessment Report<sup>9</sup> in 2013 of the “Strengthening Climate and Disaster Risk Governance in Vanuatu Project” summarized key climate change findings as follows:

- Increase in daily temperatures is projected to be the same across all of Vanuatu for minimum, mean and maximum daily temperatures. Compared to 1995, by 2040 temperature will be higher by 1.2°C (global 1.9°C), and 2070 projected to be higher by 2.3°C (global 3.6°C);
- Increase in sea surface temperatures will bring the whole of Vanuatu in a zone where coral bleaching will be frequent (above 29.5°C);
- The change in precipitation is unclear: half the models project a change of less than 10% by 2040, while the other half projects a stronger change. This will pose challenges to planning and policy development. This uncertainty is much higher than the differences over the islands;
- Sea level is estimated to be currently increasing from CC by 6mm / year. Models simulate an increase of up to 15 cm by 2030, with increases of up to 60 cm indicated by 209.
- Information on local vertical land movement is crucial. For Port Vila, an observed sea level increase of 159 cm is projected for 2100, when the observed sinking of 4.8 mm/year is taken into account;
- In 20 years’ time it is projected that ocean acidification will have damaged 80% of the coral reefs around the world, including those in Vanuatu. Considering their crucial role for coastal protection, food security and tourism, this makes it one of the most significant impacts of climate change for Vanuatu;
- The extreme temperatures (including heat-waves) will reach higher levels and become more frequent. By 2040, the current 1-day maximum occurring once every 20 years will occur every other year;
- The duration of dry periods will become longer. The 1 in 5 year event will lengthen from just under 19 days to 28 days;
- Extreme rainfall will become more frequent and intense. By 2040, the 1 in 100 year event will have increased 10-11%. This change is the same over all islands. Frequencies of current events will increase by 1.2 - 2.5%;

---

6 Nunn, Patrick, Mary Baniala, Morris Harrison, and Paul Geraghty, “Vanished Islands in Vanuatu: New research and a preliminary geohazard assessment,” *Journal of the Royal Society of New Zealand*, Vol. 36, No. 1, pg. 37-50. 2007.

7 Sulu, R. 2007. Status of Coral Reefs in the South West Pacific: 2004. Duva, Fiji. IPS Publications, University of the South Pacific.

8 Kuwae Eruption in 1453, the full island disappears and gives place to the Shepherds Islands. One of the most powerful volcanic eruption in the last 500 years

9 Risk Governance Assessment Report, of the Project titled “Strengthening Climate and Disaster Risk Governance in Vanuatu”, UNDP, Ministry of Climate Change, Draft Report November 2013.

- Episodic high sea surface temperatures will increase from about 10% of the time currently to 25% of the time by 2040 (in Efate). This is different for different islands;

Above projected climate change impacts may serve to exacerbate geophysical activities such as the vertical motion (subsidence/uplift) of Vanuatu archipelago of +/- 1cm per year.

11. Such changes will have a range of very significant impacts. These will include a decrease agricultural productivity, damage to coastal ecosystems and marine environments, accelerate coastal erosion, and affect the quality and availability of drinking water. There will be severe impacts on terrestrial environments and terrestrial biodiversity.

12. Higher ocean surface temperatures will lead to severe coral bleaching and affect the reproductive potential of corals and reef fish species. It may also create conditions favorable for algal blooms and increase the severity of ciguatera fish poisoning. Acidification of the oceans due to climate change will result in damage to the marine ecosystem, particularly reefs. Furthermore, sea-level rise may enhance salt-water intrusion into the shallow ground water lenses on small islands and increasingly lead to diminution of lowland areas. Changed weather patterns are projected to be likely to increase the incidence of malaria and other infectious water borne diseases.

13. Historical events appear to support the potential impact of the preceding projections. Vanuatu is one of the most vulnerable island countries in the Pacific that is subjected to extreme climate events such as cyclones, floods and droughts almost annually. In particular, cyclones have been a major threat averaging 2 to 3 events per season. For the Pacific region, the highest concentration of cyclones occurs in the vicinity of Vanuatu as it is one of the primary cyclone paths, experiencing cyclonic activities nearly every year. Over the past decade major cyclones include: Uma in 1987; Betsy in 1992; Prema in 1993; Dani in 1999; Sosé in 2001; and Ivy in 2004 (where winds intensified to hurricane force strength with gusts over 100 knots). While climate change impacts do not predict an increase in cyclone frequency around Vanuatu, it is anticipated that cyclones will increase in intensity.

14. The impacts of climate change described above will have serious consequences on the coastal environment in Vanuatu. The bio-geophysical effects include coastal and inland erosion, increased flooding, loss of coastal lowlands and wetlands and salinization of surface and groundwater. The loss and degradation of coastal wetlands will impact on the livelihoods and nutrition of coastal dwellers that depend on the ecosystem services from intact and healthy mangroves, coral reefs and other coastal habitats. In addition, the effects on the socio-economy of the country include the risks to human life and health, loss of property and infrastructure, deterioration of agriculture, tourism and recreation and loss of livelihoods. All these threaten the way of life of coastal communities that have strong affinity to coastal ecosystems for economic, social and sometimes spiritual purposes.

15. Adding to Vanuatu's physical characteristics, other conditions contribute to the country's vulnerability:

- A narrow economic base and a weak developing economy. While small-scale agriculture provides subsistence living for about 65% of the population, about 65% of calculated GDP is generated by the service sector. Agriculture and a small industry sector accounts for about 25% and 10% of GDP respectively. The local market is small. The growing tourism sector, with 99,000 visitors (in 2009<sup>10</sup>) mainly around Port Vila, is the main foreign exchange earner. This narrow economic base makes the cash economy particularly vulnerable to disruption by natural disasters.
- Weak inter- and intra-island communication and transport networks. Many areas lack national radio reception. Well-developed road transport exists only near population centers (just 111 kilometers of roads are sealed), mostly on the larger islands. While air service is daily to the main islands, there are only 5 airports with sealed runways (out of 29 in total).
- Wide dispersal of 80 islands spread over a huge 680,000 km<sup>2</sup> with many areas of the country isolated and extremely vulnerable in the event of disaster.

16. The Risk Pacific Catastrophe Risk Assessment and Financing Initiative (2011)<sup>11</sup> - Vanuatu Country Profile notes the following:

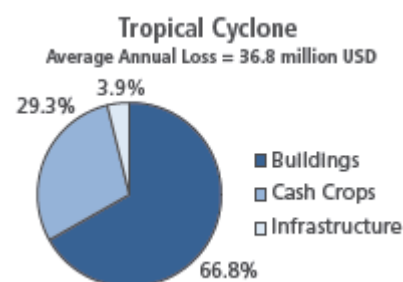
---

<sup>10</sup> <http://www.indexmundi.com/facts/vanuatu/international-tourism>

<sup>11</sup> Risk Pacific Catastrophe Risk Assessment and Financing Initiative - Country Profile for Vanuatu- Draft for Discussion. . World Bank – September 2011 (Please see attached in Annex 2).

- Vanuatu has been affected by exceptionally devastating cyclones several times in the last few decades. For example, since 1990, Vanuatu has been subject to at least 20 damaging tropical cyclones. The most significant cyclones in recent years were Uma in 1987 and Ivy in 2004, each affecting nearly 50,000 people and causing destruction that amounted to losses in the tens to hundreds of million US\$.
- Vanuatu is expected to incur, on average, US\$48 million per year in losses due to earthquakes and tropical cyclones. In the next 50 years, Vanuatu has a 50% chance of experiencing a loss exceeding US\$330 million and casualties larger than 730 people, and a 10% chance of experiencing a loss exceeding US\$540 million and casualties larger than 2,100 people.
- A tropical cyclone loss exceeding US\$312 million, which is equivalent to about 43% of Vanuatu's GDP, is to be expected, on average once every 100 years. This frequency may increase with the climate change scenarios.

17. In summary, the costs of climate change impact in Vanuatu are high. If more cyclones follow the path that Uma took in 1987 and Ivy in February 2004, people's livelihoods, as well as the larger economic development of the country, will essentially come to a halt as government will be forced to focus on recovery rather than development efforts. Both cyclones affected nearly 100,000 people and caused destruction in the hundreds of millions of dollars (US\$). The study by SOPAC estimated that the average annual loss from tropical cyclones is about US\$37 million in terms of damages to buildings and other infrastructure and to agriculture, which is a major sector of the economy (see Annex 2). It is expected that most of these will occur in the coastal zone where the concentration of infrastructure is highest as with farming and related activities. These direct losses from tropical cyclones are caused by wind and flooding due to rain and storm surges, all of which are climate-induced.



### 1.2.3 Governance context

18. Vanuatu has responded positively to the climate change challenges from a governance perspective and has established the National Advisory Board on Climate Change and Disaster Risk Reduction (NAB) with primary responsibility for coordinating and mainstreaming climate change policies, programs and projects and linking to a "whole of government approach". The representatives to the NAB are drawn from all key government agencies, NGOs and related projects. The Secretariat to the NAB is the Project Management Unit (PMU) established in October 2012 based at the VMGD.

19. To guide the implementation of effective and efficient adaptation efforts, Vanuatu has also endorsed the 2012-2022 National Climate Change Adaptation Strategy (NCCAS) and the National Adaption Program for Action (NAPA). These plans provide policy recommendations; sector specific adaptation plans and outline a systematic, long-term approach to embed climate change adaptation into core national and sector level activities.

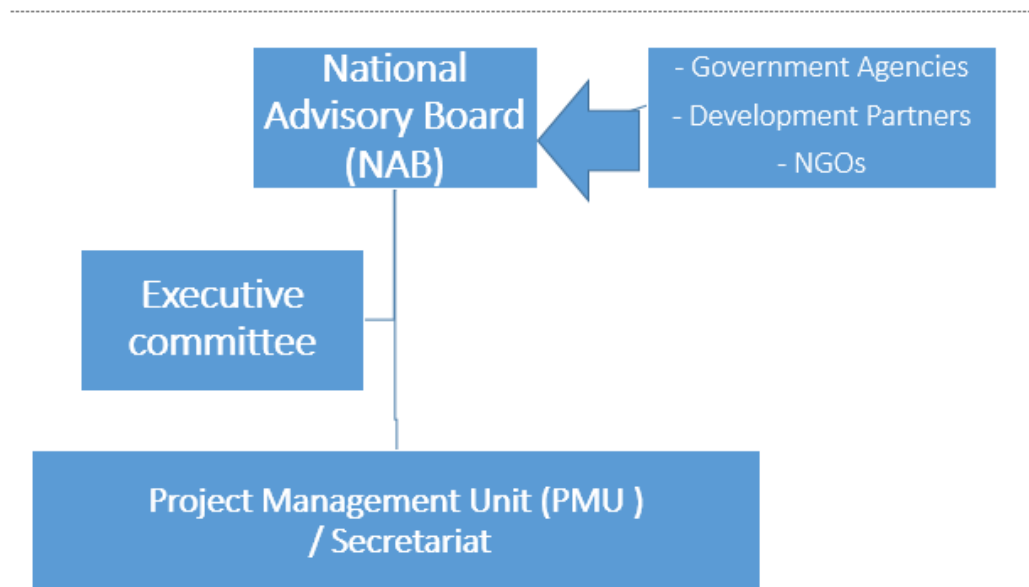
20. A *National Integrated Coastal Management Framework (NICMF) and Implementation Strategy* was drafted in 2010 with the vision of "a clean and healthy coastal and marine environment for current and future generations" and outlines institutional arrangements needed for management of coastal ecosystems to achieve this vision. The draft strategy also highlights the importance of factoring the impacts of climate change into the coastal planning process. These national plans and strategies provide an important framework for the development and implementation of V-CAP. Most importantly, it has the potential to strongly recognize the opportunities of ICM as the basis for planning responses to manage the impacts of climate change. However, this document is not yet finalized. But, from a policy standpoint, the NICMF needs to be complemented by similar efforts to strengthen the climate responsiveness of other legislation, including the Environmental Management and Conservation Act 2002 (incorporating Environmental Impact Assessment), the National Disaster Act 2000, the Forestry Act 2001, the Fisheries Act 2006, the National Parks Act 1993, the National Biodiversity Strategies and Action Plan, and the Water Resource Management Act 2002.

21. Vanuatu has developed a National Climate Change Adaptation Strategy for Land-Based Resources (2012 – 2022) Second Draft<sup>12</sup>. This is a high quality document that seeks draw together agriculture, water

<sup>12</sup>[http://www.undp-alm.org/sites/default/files/downloads/vanuatu\\_national\\_climate\\_change\\_adaptation\\_strategy\\_-\\_2012-2022.pdf](http://www.undp-alm.org/sites/default/files/downloads/vanuatu_national_climate_change_adaptation_strategy_-_2012-2022.pdf)

and related sectors. The draft is currently being finalized with support from GIZ and related development partners. This will provide a useful document to support implementation of V-CAP.

22. The NAB is a formal government institutional mechanism established in October 2012. Prior to mid-2012, many of the NAB functions were undertaken by two separate entities, namely the National Advisory Committee on Climate Change (NACCC) and the National Task Force on Disaster Risk Reduction (NTF). The NAB's underlying purpose is to bring greater levels of coordination among the many individual CC/DRR projects and to ensure high levels of transparency in the determination of ongoing priorities and funding. The existing NAB structure is shown below.



23. The NAB has six primary functions as outlined in the Government decision:

- Act as Vanuatu's supreme policy making and advisory body for all disaster risk reduction (DRR) and CC programs, projects, initiatives and activities;.
- Develop DRR and CC policies, guidelines and positions;
- Advise on international, regional and national DRR and CC obligations;
- Advise, facilitate and endorse the development of new DRR & CC programs, projects, initiatives and activities – including mainstreaming CC and DRR;
- Act as a focal point for information-sharing and coordination on CC/DRR, and
- Advise, guide and coordinate the development of national CC & DRR financing processes.

24. The NAB is supported by an Executive Committee, which meets and reacts to address issues as required. The Executive Committee is comprised of the Directors' of VMGD and NDMO (Co-Chairs); the Department for Strategic Management (DSM), DEPC, Finance; and representatives from and international NGO (I-NGO) and the NAB Secretariat/PMU.

25. The NAB's PMU was established to undertake the roles and responsibilities associated with the following strategic areas:

- **Strategic Governance and Policy:** Including implementation of actions associated with national, regional and international CC/DRR obligations; identification of positions for international summits, identification of CC/DRR priorities, and development of a national policy on CC and DRR.
- **Technical Advice, Project Monitoring and Coordination:** Including providing technical advice to government departments and NGOs, acting as the coordination point for CC and DRR matters, starting a 'project endorsement process' and 'information materials endorsement process' and working to support standardized approaches.
- **Project Management – Financing, Procurement & Administration:** Including Secretariat duties for the NAB, investigating funding mechanisms for Vanuatu, providing support and advice on procurement for CC/DRR, and implementing projects.

26. The MCCAMGEEDM through the PMU will be the primary point of linkage for V-CAP into Vanuatu's government processes. It will provide administration and finance support and will ensure coordination and integration with other climate change related projects in Vanuatu. An important part of V-CAP implementation is to support the country's current decentralization process as outlined below.

### **Linkages to national, provincial and local administrations**

27. The Decentralization Act (2006) and the Amendment to the Act (2013) outline the roles and responsibilities of the local administration regarding decentralisation of service delivery across Vanuatu. The Department of Local Authorities (DLA) of the Ministry of Interior is responsible for implementing the Act and the Amendment to this Act. The DLA is currently under resourced however and lacks the capacity to drive implementation of the Decentralisation Act. As such, V-CAP will seek to support and develop capacity of the Area Councils (ACs) in project sites through planning, delivery and monitoring of local level climate change adaptation solutions.

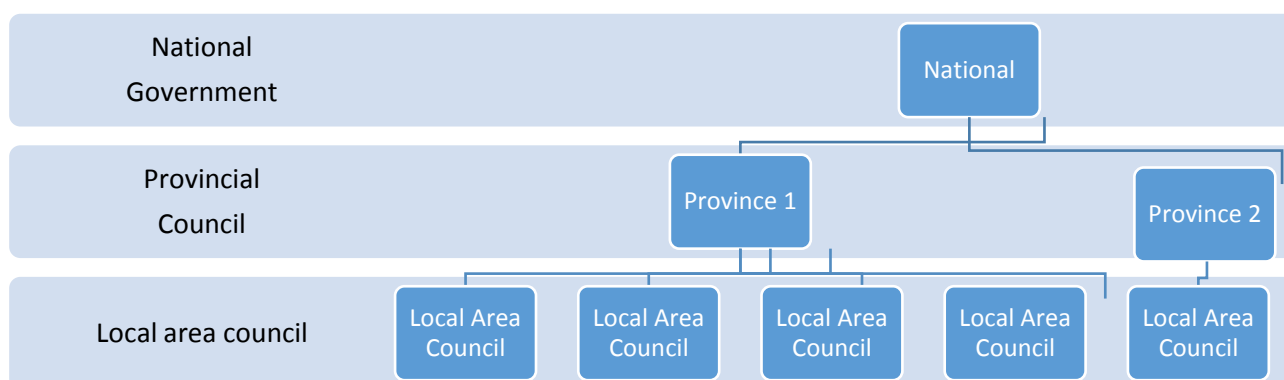
28. Working through ACs is necessary to ensure that services from national government to the grassroots, and particularly to the most vulnerable CC communities, are actually delivered in a comprehensive and integrated manner. Area Councils throughout Vanuatu have vastly different priorities for development and vulnerabilities to CC. Hence, V-CAP will work closely with the ACs in V-CAP sites to create customized CCA plans in response to community needs and priorities and to support implementation and monitoring of these plans to ensure sustainable management.

### **Provincial level**

29. According to the Decentralization Act (Part Two), Local Governments have two layers: Local Government Councils (at Provincial level) and Area Councils (at district/local level, as some Provinces, like Shefa, have created an intermediate layer called "Sub-Districts"). Each Provincial Government Council is composed of elected officials (for four years) and appointed members including the Provincial Secretary General who is selected by the Public Service Commission (PSC) as per clause 18E of the PSC Act.

30. The Secretary General, as the Chief Executive Officer of the Local Government Council for which s/he is appointed, has responsibility for all accounts, records and other documents of the Local Government Council.

31. The Local Government Council financial year is 12 calendar months commencing 1st January. Each Local Government Council should have a "Local Government Fund" consisting of the grants received from the central government under section 26 & 27, plus all local taxes, fees, rents, fines and profits from trade lawfully levied by the Local Government Council.



### **Area Council level**

32. The Decentralization Act allows for the Minister of Internal Affairs on the advice of each Provincial Government Council to divide a local government region into Area Council divisions or districts and may alter those divisions or districts. The Area Councils are responsible for reporting to the Provincial Council and provincial government administration. The Government has nearly completed the process of establishing each of the Local Area Councils.

33. Area Secretaries and Field Officers are appointed by provincial governments and live and work within their respective ACs. Their basic duties include the following services: tax collection, voter registration, government awareness duties, statistics enumeration duties and assisting development projects within their

respective Area Councils. Each Area Council is mandated to meet at least four times per year. Area Council funds consist of monies received from the relevant Local Government Council and other sources.

34. Area Councils, supported by the respective Area Secretary, are comprised of delegates representing Chiefs, Churches, Women, Youth, Business Houses and Persons with a Disability. These delegates are selected to be representative of the various villages and sub-communities which form together to create the AC. Amendments to the Decentralization Act outline the functions of ACs as follows:

- Review and consolidate community action plans for each community within that area council division or district;
- Develop an Area Council Strategic Development Plan for the relevant area council division or district; and
- Coordinate, monitor and report to the relevant Provincial Government Council on the implementation of the relevant Area Council Strategic Development Plan.

35. It is widely acknowledged that Area Councils are under-resourced and generally lack the capacity to perform their mandated responsibilities. As such, this provides a strategic opportunity for V-CAP to assist in strengthening Area Councils and build local capacity through more effective planning and management of local resources. The requirement that women, youth and persons with disabilities are represented on all ACs provides an important strategic opportunity for V-CAP to work with marginalized people to ensure their views are fully considered when formulating Area Council annual plans with respect to climate change issues.

### ***Other line agencies***

36. Although there appears to be a relatively high degree of commitment across Vanuatu's 12 ministries to integrate climate change issues into national and sector plans, there are significant challenges in ensuring collaboration across ministries and sectors and budget allocation for climate change adaptation and implementation in cross-sector agreements. To guide the implementation of efficient adaptation activities, Vanuatu has endorsed a National Climate Change Adaptation Strategy (NCCAS) for the period 2012-2022. This plan provides policy recommendations for sector specific adaptation plans and a systematic, long-term approach for embedding climate change adaptation into core national and sector activities.

37. At all levels of government, there is a need to increase understanding of climate change issues and impacts on inland and coastal ecosystems. Moreover, lack of coordination between government agencies, provincial authorities and rural communities hinders climate change adaptation approaches and knowledge exchange. Technical support, education and training is therefore required to further mainstream climate change into legal frameworks and sector plans as well as to equip decision-makers, planners, managers and communities with the required knowledge, skills, and motivation to proactively address climate change issues. In this regard, V-CAP will create locally appropriate awareness materials regarding CCA activities or distribution to targeted communities and the general public.

38. In summary, while Vanuatu has taken decisive steps at the governance level to address the impacts of climate change, there remain serious gaps for the country to effectively increase the resilience of communities within the coastal zone. The proposed project focuses on 4 components that seek to address these gaps; further context and baseline specific information is provided below.

## **1.3 Continuous challenges, root causes and impacts**

39. The challenge of climate change adaptation in Vanuatu is immense considering its recognized high level of vulnerability to climate-related and natural disasters (Vanuatu was ranked as the most vulnerable country in the world according to the Commonwealth Vulnerability Index) and Vanuatu continues to be listed by UN as a Least Developed Country (LDC) despite its high per capita Gross Domestic Product (GDP) due to its status as one of the world's most vulnerable countries.

40. The impacts of climate change projections will continue to interact with the underlying causes of existing coastal problems - which are both climate and non-climate driven. Climate causes and human responses are interconnected and in combination provide a significant development challenge for the people of Vanuatu.

41. The coastal and marine ecosystems of Vanuatu are central to the development and sustainability of its economy. Coral reefs, mangroves, sea grasses, wetlands and other coastal habitats are critical ecosystems that are exposed to varying degrees of pressure and show signs of continuous and serious degradation due to human activities. Water quality in seas, coastal areas and river basins is at risk of serious deterioration due to unsustainable practices and polluting human activities.

42. Current threats against coastal and marine habitats, waterways and river basins are seriously compounded by rapid population growth and the resulting increase in demand for natural resources.



Another major threat to coastal and marine areas is weak and ineffective governance systems that are unable to effectively assist communities in managing their resources in a sustainable manner. The major recurring challenges to coastal and marine ecosystems in Vanuatu are discussed briefly below using the analytical framework developed by UNDP titled “*Designing climate change adaptation initiatives (2010)*”.

### **1.3.1 Land use, eutrophication and sedimentation in coastal and upland areas**

43. Agricultural expansion is occurring throughout Vanuatu for a number of reasons. Firstly, the population is increasing at a rapid rate (2.3% per annum) and increased food supply is required to meet the growing demand. Secondly, there are increasing reports of diseases and pests in subsistence crops with a spoilage factor of between 10-50% reported in some areas during V-CAP consultations. Thirdly, there is increasing engagement in the cash economy through production of taro and kava. It is difficult to estimate the total area used for agriculture production due to the dispersed nature of subsistence gardens, but it appears that there are few areas untouched by recent agriculture and forestry activities in V-CAP sites visited.

44. Currently, there are few if any fertilizers and pesticides used in Vanuatu although this may change with increasing pressure on the land and reported increases in agricultural pests and diseases. There are increasing levels of nutrients being observed in rivers and streams in the coastal zone, however, thought to be due to cattle grazing in upstream areas such as coconut plantations in islands like Santo. At present, there is little or no control over cattle grazing in watersheds and rivers although there are guidelines on riparian vegetation, although this does not seem to be enforced. As a result, there are heavy nutrient loads in some rivers in South Santo as evidenced by large algal mats on the river base. This level of water pollution has the potential to lead to eutrophication of these rivers resulting in significant human health issues.

45. Sedimentation as a result of poor land practices was reported in all V-CAP sites surveyed. Expanding agriculture and the increasing number of cattle, goats and pigs combined with forestry activities is exacerbating soil erosion which is having a direct impact on the health of marine ecosystems. For instance, on the east coast of Epi Island large areas of coral reefs are covered in soil and silt and the water was reported to be increasing in turbidity. In addition, coral diseases were observed as well as high numbers of Crown-of-Thorns Sea stars. Quantitative assessment of coastal sedimentation is always difficult because sediment concentrations and settling rates are extremely variable and dependent on a detailed history of rain, wind, and waves at each site. Areas of poor land management are often subject to accelerated rates of soil erosion, increased surface run-off and sedimentation of streams and rivers, reduced infiltration and ground water recharge, with adverse water quality impacts on surface water and ground water resources.

46. There is little to no enforcement of livestock encroachment on water resources in Vanuatu. Cattle and other livestock frequently have direct access to rivers and streams creating a problematic increase in the nitrogen concentration in water sources. Additionally, large densely populated grazing areas do not have protective vegetative barriers on the edges of the rivers and streams to prevent waste to run-off into the water sources resulting in nitrogen loading. Nitrogen loading causes hypoxic conditions that are harmful to aquatic ecosystems as well as human health, particularly children.

### **1.3.2 Coastal erosion**

47. Coastal erosion as demonstrated by decaying beach sediments through wave action, tidal and wave currents or drainage is a problem in a number of areas in Vanuatu, particularly on low-lying islands. Erosion is exacerbated by waves generated by storms, wind and which may take the form of either seasonal (temporary) or long-term losses of sediment. Erosion in one location may result in accretion in nearby areas as beaches and coastlines adjust to changing wind and resulting wave patterns. Vanuatu is particularly susceptible to these changes given the geomorphic nature of many islands associated with tectonic activity. One example is the island of Akam in South Malekula which subsided approximately 1 meter following an earthquake in 1996<sup>13</sup>. Since then, the island has been subject to severe erosion on its eastward portion with recent accretion on the western side of the island. This situation, while not specifically a climate change related event, will certainly be exacerbated by increasing sea-levels in line with climate change predictions. As a result, local residents are making voluntary decisions to leave the island citing climate change and increasing sea levels as a key factor in this decision.

48. The El-Niño Southern Oscillation (ENSO) cycle also influences the wind regimes which in turn influence wave regimes and local erosion and deposition patterns in Vanuatu. Often these ENSO regimes are decadal in their cycles, and coasts will be influenced by these patterns which the likelihood of increasing

---

<sup>13</sup> As observed by local communities and communicated to the PPG Team.

frequency of ENSO events. The lessons to be learnt from erosion and changes in coastal processes is that they are often part of a natural process, with changes unpredictable in nature that need to be incorporated into the planning process, using the precautionary principle.

49. The International Panel on Climate Change (IPCC) suggests that erosion is the main process that will occur on land as sea levels continue to rise. As a result, structures built to protect coastal areas will be damaged and destroyed by the sea as the shoreline recedes. Climate change and sea-level rise will tend to amplify the conditions of currently eroding coasts due to rising sea levels and declining sea ice allow higher wave and storm surge to impact the shores. In small and isolated islands in Vanuatu the construction of sea walls and barriers to coastal erosion is not financially or technically feasible. Thus soft options combined together with careful planning of the coastal zone with managed retreat, where necessary, the only option.

### **1.3.3 Marine resource exploitation and marine resource degradation**

50. Marine fisheries<sup>14</sup> have various levels of exploitation around the country. Reef fisheries are over-fished in some areas, notably in and around the island of Efate, but they are considered as generally under-exploited near the outer islands. The deep -water snapper resource has the potential for some further exploitation but there appear to be definite limits. Improvements in catching, handling and marketing systems and commercialisation of the domestic fishing industry are needed; however, overall Vanuatu's fisheries are probably not sufficient to supply a larger proportion of the protein needs of a rapidly growing population. V-CAP will support appropriate authorities to work with communities to identify sustainable resource harvesting methodologies.

51. Climate change will add to the challenges of maintaining coastal ecosystem health. There are already challenges with high number of Crown-of Thorn Seastars (COTS), deposition of sediments and high level of nutrients entering the ecosystem. Combined with the heavy fishing pressure in some sites there is substantial ecosystem degradation. Increased temperature and increased ocean acidity will certainly impact of ecosystem health. V-CAP will support a planned approach for a series of interventions to enhance ecosystem resilience including supporting marine managed areas, removal of COTs and the development of integrated coastal zone management plans.

### **1.3.4 Roads related and public conveyance infrastructure**

52. The main focus for V-CAP infrastructure adaptation involves addressing the resilience of public conveyance infrastructure to the challenges related to climate change. Public conveyance infrastructure in the context of V-CAP includes primary rural roads, i.e. the main roads on islands, secondary roads (or feeder roads), and pedestrian walking tracks (see section 1.3.5 below) – typically unsealed through undulating terrain, often steep, with many river crossings.

53. In isolated islands in Vanuatu, roads and related infrastructure are degraded by the both use by vehicles (and pedestrians) and climate related weathering – and in many locations it is weathering that creates a greater degradation of the roads than vehicle use. This includes erosion of hill slopes, bogs from wheels being stuck in mud, and gully erosion on the side of roads. These types of weathering issues are expected to be made worse under climate change scenarios in line with the climate change projections.

54. On isolated islands the institutional framework for the maintenance of roads and related infrastructure are generally weak and will find it difficult for the incorporation of climate change into these approaches. For example, Public Works Department (PWD) has not conducted works on Epi Island since 1997. It is vital that a maintenance and operations capacity is delegated to institutions and communities on smaller islands to undertake these works. As such, capacity building needs to constitute a key component of any program that seeks to address climate change at the local level.

55. The public conveyance infrastructure is important through linking the network of main roads to feeder road to walking tracks rural communities to population centers, schools, health facilities and markets. These roads act as “facilitators” in that they facilitate rural and agricultural development through improved accessibility and mobility thus providing benefits to traders, transport operators and extension workers. Rural roads are also critical to ensuring that the access needs of vulnerable people to essential services are met regardless of weather conditions.

56. In project planning, it is important to differentiate between areas with adequate road access versus those areas with poor or no road access. In areas with relatively good or adequate road access, the most

---

<sup>14</sup> Vanuatu Country Profile, October 2008, Prepared by SPC Strategic Engagement, Policy and Planning Facility

important objective is, at a minimum, to sustain those levels of access through preventative action against further climate change-related damage. Climate proofing of essential rural roads against flooding requires increased capital outlay for structures such as drains, retention walls, culverts and bridges. By reducing the flow of water, including through vegetative means, it is possible to reduce the possible damage to the roads as a result of climate change.

57. A well-functioning rural road network is critical for increasing agricultural productivity, through provision of extension services, providing access to markets and supporting community development generally. Rural road development offers an effective strategy for targeting poverty directly through road and track investment leading to improved access to services, goods and services and indirectly through the better performance of the local economy. The sustainability of many rural road networks investigated under V-CAP are currently at risk of being affected by issues related to climate change.

58. The selected sites for V-CAP interventions will face increased occurrence of water-related damage during the wet season due to the extreme weather events. Climate change considerations for rural roads will include the greening and stabilizing of vulnerable road embankments and adapting of sub-grade material to withstand higher moisture content. Some roads will also require additional structures, such as culverts, bridges and drains. Currently the PWD is working, with support the Vanuatu Transport Sector Support Program (VTSSP) and the Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP), to design standard models of road related infrastructure incorporating elements for climate change.

### ***Operation and Maintenance***

59. In general, road and other infrastructure tend to be poorly maintained in Vanuatu. This is because there is greater interest by government and donor partners in constructing than maintaining and also because developers and users have the attitude of that fixing something is only important when it is completely broken. In addition, funds for maintenance may be used for other “more important activities”. However, it is critical that maintenance be organized, from the outset, as a preventive measure and for this reason it should start from the day construction works are completed.

60. The aim of regular and timely maintenance is to ensure that the infrastructure remains serviceable or, at least, to increase the life of the infrastructure by putting off the date at which it needs to be reconstructed. This has several benefits, the most important being that it stretches the period over which the benefits of the investment made are available and thus provides a higher rate of return on the initial investment. In addition, it delays the day when large investments are required for reconstruction.

61. When constructing infrastructure for climate change adaptation, it is important to impress on all parties involved, but particularly communities, the need to set aside time and resources for maintaining the works. There are many models for the maintenance of local infrastructure, and several entail forming user groups and community organizations. The crucial issue is to ensure that maintenance is planned and carried out from the moment that the works are completed and that resources and an organization are ready to ensure that it takes place. This will be particularly important as the impact of climate change is felt. Infrastructure strengthened or constructed to reduce the impacts of climate change needs to be maintained on a regular basis. Given the limited funds that are generally set aside for maintenance, the onus will often fall on water user committees, local road maintenance committees and community organizations.

62. The maintenance of roads is a substantial challenge given the remote location of a number of the sites. On smaller islands there are generally few roads with only a limited number of vehicles on these roads. As such, road wear and tear is more related to climate related factors than to vehicle use. Erosion of soil of road banks, gully erosion by water and blocked drains are degrading the roads, increasing maintenance requirements and reducing their lifespan. These issues are expected to worsen under the scenarios for climate change in Vanuatu. Soft measures such as re-vegetation of road sides, improving drainage and ensuring a road maintenance program is developed incorporating management of water and climate related issues.

63. It is important that arrangements are developed for long-term maintenance of the road related infrastructure assets. During the PPG consultations all communities indicated their willingness to play a role in maintenance of the road infrastructure. Maintenance cost and plans need to be established from the beginning, along with effective implementation procedures and an active M&E system to ensure efficiency and compliance.

64. At the local level, several the PWD is using innovative procedures to implement maintenance. Community contracting, contracting individuals or groups, using local contractors and forming user groups is currently being used.

### ***Implementing road management***

65. The project will support the climate proofing of existing infrastructure in priority development sites in isolated communities in Vanuatu. This will include:

- Applying needs-based participatory approaches within communities, inclusive of women, youth and people with disabilities;
- Developing appropriate management procedures;
- Defining and setting technical and quality standards for rural infrastructure works, in particular in relation to the climate proofing of infrastructure;
- Building effective local organizations for the short-medium term operational management of the infrastructure management of infrastructure including maintenance and repairs;
- Supporting local small and medium-sized contractors;
- Establishing local planning and programming procedures to ensure that communities prioritize their needs and work with provincial government agencies in formulating appropriate responses and developing maintenance systems; and
- Raising awareness on the effects on local infrastructure of climate change and techniques to strengthen existing infrastructure.

66. In implementing the VTSSP, the PWD developed a participatory methodology using local “Island-based contractors” (IBCs) to provide resources including labor, skills, and materials to implement the works on small islands. Through this process, construction works are broken down into packages, which are executed by small-scale contractors with some experience in small-scale construction. During construction, training was given to the organizers in measuring earthworks, placement of gabion boxes and other semi-skilled works. Only complex structures were tendered and executed by more skilled, licensed contractors from outside. V-CAP proposes to use a similar local resource-based approach to implementation.

### ***Local capacity building for road maintenance***

67. A key long-term challenge will be maintenance of roads and related infrastructure on small isolated islands, particularly under climate change scenarios of increased extreme weather events. Currently local communities and local governments have a limited role in maintenance and management of road and associated public works<sup>15</sup>. Additionally, communities are currently not providing regular reports to Area Councils and/or provinces on the status of roads through a regular monitoring program. Thus, a key focus of V-CAP will be the development of local government and community capacity to conduct supervision on the status of roads and provide regular support to local, provincial and national authorities

68. As noted, communities will need to be informed of, and participate in the identification of key climate change issues and likely impacts on the local area. The selection of local infrastructure works for climate change adaptation should be based on the demand voiced by the users of the infrastructure most affected by the impact. This implies not only that they be fully involved but also that they are provided with the up-to-date information on the most suitable works for the climate proofing on infrastructure, including approved designs, specifications and an understating of the cost implications of appropriate choices in relation to the size and scope of works.

69. Local government bodies will need to develop procedures for planning and managing that respond to those demands. In addition, they will require the capacity to deal with budget, design and procurement issues related to the large-scale investments needed for climate change adaptation. Given that much of the work will involve communities, it will be important to provide members with relevant training for the work they will be responsible. Much of this will not be formal training but rather provided in the local context and language through NGOs and/or other project partners. With respect to local government agencies and private sector operators, more formal training will be needed.

### **1.3.5 Pedestrian River Crossings and Walkways**

70. The majority of V-CAP sites do not have extensive road networks, and even when useable roads do exist, there are very few operational vehicles. Further, where vehicles are operational in remote areas, very few people can afford to travel by these vehicles as they are expensive to charter. Similarly boats in remote areas are expensive and generally unaffordable, except in emergency situations. As such, the primary mode of travel for the vast majority of people living in V-CAP project sites is by foot. The majority of this “public conveyance infrastructure” used by pedestrians is maintained by local communities. Communities have been using some of these transport routes for hundreds of years. However, with the increasing modernization of small islands, there is increasing movement of people between their villages and schools, health facilities, markets and other government services. The pedestrian tracks link to feeder roads which then link to primary

---

<sup>15</sup> Currently PWD funds communities in rural Efate, Emae and South Epi to provide road maintenance, clean drainage, etc.

roads (if they exist). The increasing pedestrian traffic combined with climate related events are causing challenges for communities at V-CAP sites.

71. In fine weather there are typically few issues with the use of transport in the villages. For example, other than the expense and lack of boats, sea travel is not considered a major problem in dry weather and calm seas. However, many coastal communities visited reported significant health and safety issues during the wet season. Stakeholders reported that numerous children have died or been injured while attempting to cross rivers and streams that fill quickly (within hours) and become impassable en route to/from schools; the same has occurred when people have tried to access health centers during the wet season. Government health and education personnel confirmed these reports and also noted that children frequently miss a significant amount of school when river levels are high and dangerous. There were reports to the PPG team that at least 6 children have lost their lives in recent years trying wade across rivers after rain. Other examples include teams of men carrying women on stretchers through on footpaths traversing steep hills for 3-4 hours while traveling to seek urgent medical support. In addition, there are dangerous river crossing on roads and walking paths as well as areas of erosion, landslides and other related issues. These will be made worse by changing weather conditions. Given rising precipitation and population levels as well as increasing river -bank erosion, crossings are expected to become increasingly dangerous. In addition to safety factors and access to health and education services, dangerous river crossings also restrict access to markets, which in turn adversely affects food security and income generation.

72. Climate proofing of tracks and paths, and providing incrementally safer “climate proof” structures, such as foot bridges, staircases, walking paths, safety rails and pedestrian river crossings, existing public conveyance infrastructure including bush walking racks will ensure the safe movement of people and goods, in and between selected villages and services including schools, health centers and hospitals, markets and government services.

73. In discussion with PWD and VTSSP managers, it was agreed that walkways and river crossings are essential to the health and socio-economic well-being of coastal communities. Given resource restrictions, PWD is unable to assume responsibility for secondary roads, pedestrian river crossings and footpaths but indicated their support for V-CAP to develop this infrastructure linked to services and primary public conveyance networks. However, it was stressed that these crossings should be managed at the local level with communities and Area Councils assuming responsibility for construction and maintenance of any complementary infrastructure. This self-help strategy is in line with the V-CAP approach to sustainable solutions and provides an excellent opportunity to engage youth in Area Council Strategic Plans.

### 1.3.6 Climate variation and change including extreme weather events

74. Rainfall in Vanuatu spreads from those islands in the north and central part of the country receiving an average of over 2,000mm/year to those in the south about 1,000mm/year. These trends are strongly influence by the El Nino weather conditions as this influences the position of the South Pacific Convergence Zone (SPCZ). Rainfall across the country generally decreases drastically during an El Nino like that in 1982/83, 1986/87 and 1997/1998 events (Vanuatu Met. Service Data). Furthermore it must be clear that low-lying islands their water resources are very vulnerable to extreme climate conditions like El Nino. The detailed climate change projections for Vanuatu are presented in Annex 1.

## 1.4 Long-term solution and barriers to achieving the solution

75. The Priorities and Action Agenda (PAA) 2006 – 2015<sup>16</sup>, is based on the longer-term objectives of the Comprehensive Reform Program (CRP) on which Vanuatu embarked in 1997 and further revised in 2006. This PAA promotes “An Educated, Healthy and Wealthy Vanuatu” and forms the basis for the Government of Vanuatu development framework. This is to be achieved through achieving higher and sustainable economic growth to create jobs and raise incomes while conserving resources for future generations. The strategy also recognizes the impact of climate change and disaster on both public infrastructure and on the community livelihoods.

### 1.4.1 Barriers and solutions to climate change

#### **National Vision** **“An Educated, Healthy and Wealthy Vanuatu”**

By 2015 Vanuatu will have achieved a significant increase in real per capita incomes, along with steady growth in levels of employment. Within the region, Vanuatu will be among the leading countries in achieving the Millennium Development Goals in education, health, environmental management, and other key social indicators. Public sector reforms will have raised standards of governance, levels of productivity in the civil service, and will have resulted in higher standards of services and managerial accountability. Through continuing structural reform, Vanuatu will have established an effective enabling environment to sustain the significant private sector growth, which it aims to achieve in output and employment.

<sup>16</sup> Priorities and Action Agenda: 2006 - 2015 - “An Educated, Healthy and Wealthy Vanuatu”, Planning, Ministry of Finance and Economic Management, Government of the Republic of Vanuatu

## adaptation

76. A number of barriers have constrained implementation of comprehensive approaches to climate change adaptation in coastal areas of Vanuatu. These constraints, along with remedial actions to be undertaken by the project include:

- Limited useful information on the health of coastal ecosystems and a monitoring system to determine the status of marine ecosystems including coral reefs and mangroves as basis for monitoring impacts of climate change in Vanuatu. Given the potential impacts of acidification, increasing surface temperatures and the reliance of local communities on marine resources for their daily survival, this is essential. *V-CAP will develop solid ecosystem health baselines including climate change resilience indicators for each of the six target V-CAP sites.*
- There are limited broad institutionalized models for the deployment of solutions to integrated coastal zone management (ICZM). An attempt was made to develop a comprehensive framework as outlined in the *Draft National Integrated Coastal Zone Management Framework (NICZMF)* and Implementation Strategy for Vanuatu produced in 2010. *V-CAP will seek to support the finalization and adoption of the NICMF and support its implementation.*
- Fragmented, single sector development efforts (including donor funded initiatives) across different landscapes and government levels often do not include needed spatial management techniques and are hindered by unclear institutional responsibilities, weak policies, communication & coordination. *V-CAP will seek to support an integrated planning and delivery mechanism that demonstrates best-practice in supporting efforts of appropriate agencies and institutions.*
- Limited experience and capacity in linking sustainable land management in watersheds (IWRM, SLM, SFM and managing upland erosion issues) with both the marine environment and related livelihood needs of downstream coastal residents through ICZM approaches. *V-CAP will seek to strengthen integration of these approaches through a Reef to Ridge approach.*
- Absence of models, and lack of capacity, for comprehensive implementation of climate change adaptation as a fundamental part of Decentralization Act mainstreaming in Community and Area Council Plans, with linked financial flows to support CCA and DRR activities. *V-CAP will seek to work with the DLA to encourage Area Councils within the project's target sites to develop sustainable development plans incorporating CCA components, which build upon village level plans created by CDC's (Community Disaster Committees). These V-CAP project sites will serve as models for other Area Councils to pursue similar planning initiatives that consider CCA.*
- Limited demonstrations of holistic and comprehensive community-level climate change adaptation planning based on comprehensive vulnerability assessments, with associated plans for coastal management, DRR and upland watershed management, water resource management, with secured funding for comprehensive implementation. Often plans are developed for individuals sectors, i.e. DRR or coastal management without linkages to community development plans. *V-CAP will seek to develop an integrated community level planning framework with strong emphasis on the integration of climate change resilience to support governance, eco-system based management and sustainable livelihoods.*
- Project delivery mechanisms often bypassing, or without appropriate linkages, to provincial and local level administrations in the delivery of technical assistance and community support. *V-CAP will seek to demonstrate for integrated project delivery supporting at every level national government frameworks and recognising appropriate levels of responsibility and authority.*
- Lack of integration of traditional knowledge in approaches to disaster reduction, environmental management and responses to climate variability by local communities. *V-CAP will seek to recognise and build upon traditional knowledge and integrate appropriate approaches in the identification and application processes and plans to build resilient communities.*
- Limited recognition of the role of "soft" engineering solutions such as erosion control, river bank management combined with "hard" engineering solutions to increase the useful life of public conveyance infrastructure while reducing long-term maintenance funding requirements of said infrastructure. *V-CAP will seek to promote "soft infrastructure" solutions as a model for other locations in Vanuatu.*
- Where successful practices have been trialed, often trials have not been scaled-up or replicated due to lack of resources or progressed. *V-CAP will seek to build upon the models developed by various development partners, ( GIZ, FAO, Research Centres, BOM, NZ Met Service, IRD, and other related agencies) and provide communities with the knowledge and opportunities to expand these model approaches.*
- Severe shortage of government extension services (agriculture, fisheries and forestry workers) at the community level, especially in isolated areas has severely restricted community knowledge and use of agriculture, farming and fisheries climate change adaptation strategies. *V-CAP will seek to support technical agencies in the delivery of extension services on the ground through the demonstration of integrated, long-term and sustainable approaches.*



- Limited quality of information available on early warning systems for climate related events, and a lack of distribution of this information to isolated island communities. *V-CAP will enhance the collection of high-quality data and using in-house expertise will develop high-quality early warning systems for the broader Vanuatu populations – with a particular focus on isolated island communities;*
- Limited access to human resource development opportunities, including education and training, especially at local levels. *V-CAP will seek to undertake comprehensive capacity building at the local, Area Council, Provincial and National levels.*

## 1.5 Project Design Methodology

77. The Project Preparation Grant (PPG) team was led by the MCCAMGEEDM and comprised the following specialists: an International Project Development Consultant (as Team Leader), an Institutional Specialist and an Early Warning Systems Specialist. The PPG team also received support from the USAID Adapt Asia-Pacific Project through the provision of four additional experts including: an International Gender Advisor, an International Coastal Zone Management Specialist and International and National Climate Change Resilience Engineers. . The USAID Climate Change Adaptation Project Preparation Facility for Asia and the Pacific (USAID Adapt Asia-Pacific) is a project of the USAID Regional Development Mission for Asia that works with nations in the Asia-Pacific region to improve their access to the existing pool of financing for climate change adaptation interventions. The project is designed to share information and best practices about climate fund requirements and to support governments to both build the capacity necessary and actually access the adaptation funds that are presently available, both internationally and from other sources such as domestic budgets and the private sector. USAID Adapt Asia-Pacific promotes regional networking as well as gender and other social equity issues. (For more information, visit [www.adaptasiapacific.org](http://www.adaptasiapacific.org).)

78. The methods used to formulate the baseline analysis included:

- A national inception workshop to commence the PPG phase held in Port Vila on 7-8<sup>th</sup> August 2013. The Inception Workshop Report is contained in Annex 3.
- Bilateral consultations with numerous stakeholder groups including national and sub-national government agencies, target group representatives, local organisations, development partners and INGOs and NGOs (see Annex 4).
- Extensive island-based community consultations using a comprehensive baseline survey. A total of 1,827 community members were surveyed (60.65% male: 39.35% female) through 33 village meetings. Area profiles were completed for the community consulted see table below. Detailed information on the consultations is outlined in Annex 4.
- Consultations with donors, Council for Regional Organizations in the Pacific (CROP) agencies and other groups based in Fiji throughout the PPG phase.

Island(s)	Province	# of Community Meetings	# of Women / Youth Focus Groups	# of Environment / Infrastructure / Chiefly Focus Groups	Total Female Participants	Total Male Participants	Total Participants Consulted
Aniwa	Tafea	3	1	2	25	96	121
Epi	Shefa	6	2	2	140	187	327
Malekula	Malampa	4	3	3	117	213	330
Ambae	Penama	2	0	0	24	43	67
Pentecost	Penama	10	2	2	199	350	544
Santo	Sanma	3	3	3	70	98	168
Torres	Torba	5	3	3	144	121	265
	<b>TOTALS</b>	<b>33</b>	<b>14</b>	<b>15</b>	<b>719</b>	<b>1108</b>	<b>1827</b>

Table: Community consultations in preparation of V-CAP

### Community Consultations

79. The stakeholder baseline analysis was wide-ranging and placed significant emphasis on identifying and validating key stakeholder needs and priorities in target communities. Provincial and local level government officials were briefed following each site visit to discuss findings, possible project activities and implementation arrangements. In all provinces, the design team was accompanied to community consultations by provincial and area council officials who provided valuable insight on local development issues, current and upcoming projects and lessons learned.

80. To support the Government of Vanuatu's plans for decentralization and capacity building of Area Councils, the V-CAP design team used a newly developed Provincial Community Profiling Survey (Shefa Province), with modifications as needed to capture climate change issues and impacts from a ridge-to-reef perspective. This customized profiling tool was developed to collect site specific data using the national language, Bislama, so that provincial Area Secretaries could replicate the assessment process as needed in other parts of the country. This approach will enable provincial authorities to correlate, store and distribute V-CAP information pertaining to village development for other purposes.

81. When arranging village consultations, the team adhered to the customary Vanuatu protocol of meeting with provincial, district and area government officials prior to making direct contact with communities. Most often these government officials arranged consultations through the village chiefly system, which is the most prominent governance system present in rural Vanuatu. Community consultations involved both large and small group meetings: large group sessions were used to introduce the project and to increase people's understanding of climate change issues. Community representatives then divided themselves into small groups to discuss climate change impacts with respect to: i) coastal issues/fisheries, ii) upland issues/ erosion/ water source/ agriculture/ livestock, and iii) road and building infrastructure/water catchment. Environment-focused focus groups provided an important platform for farmers and fishers to voice concerns about local terrestrial and marine environments and provided good baseline information regarding fishing and farming practices, challenges and changes.

82. Following these small group meetings, the design team carried out site inspections of identified problem areas including upland water sources, erosion hot spots, road and public building infrastructure, rivers, beaches, and coastal waters.

### ***Gender and Social Inclusion Analysis***

83. In addition to these groups, the Gender Advisor held separate sessions with women, youth and other people with special needs. These focus groups enabled women and young people to express their views openly as this is generally problematic in the presence of men in public meetings in Vanuatu. Women's groups were extremely valuable in ensuring a gendered assessment of climate change issues and enabled the V-CAP design team to compare the perspectives of women and men in analyzing vulnerabilities and identifying priorities for intervention – in some cases women and men's perspectives and priorities varied considerably. For instance, women tended to focus on household issues like food security, water supply and access to markets, health centers and schools, while men tended to focus more on infrastructural and economic issues.

84. In some communities, youth representatives joined women's groups while in other communities youth participated in all focus groups of interest to them. Persons with disabilities and children also attended sessions according to their areas of interest. When persons with disabilities were not present at consultation meetings, information on special needs groups was gathered from key informants – often women, health care workers and teachers.

85. Wherever possible, the Gender Advisor worked closely with Provincial Women's Affairs Officers and female representatives from Area Councils to gather baseline data and to gain a better understanding of women's networks and their engagement in decision-making processes at local level. National level consultations with women's organizations and networks, CSOs, UN agencies and other development projects were also held to explore potential linkages with ongoing/upcoming work on climate change issues of direct concern to women.

### ***National Level Consultations***

86. In addition to community-based consultations and site inspections, the design team met with national and provincial level stakeholders representing relevant sectors (i.e., transport, environment, fisheries, agriculture, education, health, women and youth) and organizations (provincial administrations, area council executive officers and CSOs) to gather baseline information on climate change issues and development plans.

87. Substantial and detailed consultations were held with a full range of development partners as indicated in Annex 4.

88. In combination, this consultation process provided the basis for understanding current conditions in Vanuatu that are leading to a deepening of the risks associated with the impacts of climate change. These risks include current approaches to securing livelihoods, disaster preparedness and the mechanisms for governance and securing finance for on-going adaptations following V-CAP and other CC projects. They have also provided a forum for testing the types of interventions that communities in Vanuatu communities are willing to engage in. As such, the baseline survey can be replicated during the project to provide critical ongoing data needed for project monitoring and evaluation.

**Table 1: Stakeholders and their roles during the PPG**

Category	Institution / Stakeholder Group	Cooperation during PPG Phase
<b>National government institutions</b>		
Ministry for Climate Change Adaptation, Meteorology, Geo-hazards, Environment, Energy and Disaster Management. (MCCAMGEDM)		<ul style="list-style-type: none"> <li>• Lead agency of PPG phase</li> <li>• Data and information about ongoing CC related projects</li> <li>• Identify and guide the overall alignment and conformity with Climate Change Policy and NAPA.</li> <li>• Participation in meetings and workshops</li> <li>• Liaise with Ministry of Finance and other relevant ministries for management and operational arrangement</li> <li>• National Communication on CC</li> <li>• Liaise and joined trip to Epi island to facilitate baseline assessment</li> <li>• Provided input regarding Vulnerability Assessments</li> </ul>
	National Disaster Management Office:	<ul style="list-style-type: none"> <li>• Information on the existing disaster management arrangement</li> <li>• Information of DRR activities and policies</li> <li>• Participation in workshops and meetings</li> <li>• Inputs for management arrangement</li> </ul>
	Vanuatu Meteorology & Geo-Hazards Department	<ul style="list-style-type: none"> <li>• Information about available climate change projections</li> <li>• Data on the baseline communication equipment, gaps and capacities</li> <li>• Participation in workshops and meetings</li> </ul>
	Department of Environment	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Information on existing and future projects, staff and policies</li> <li>• Officer attached with Sanma Province facilitated and arranged community assessments in South Santo</li> <li>• Officer accompanied trip to Torres island for community assessments and assisted with facilitating meetings</li> <li>• Inputs for management arrangement</li> </ul>
Ministry of Interior	DLA: Department of Local Authorities	<ul style="list-style-type: none"> <li>• Liaise and joined trip to Epi, Santo, Ambae and Pentecost islands to make baseline assessments</li> <li>• Information about provincial and area governance arrangements</li> <li>• Lessons learned from “Community Resilience” Climate Change project</li> <li>• Participation in workshops and meetings</li> <li>• Inputs for management arrangement</li> </ul>
Ministry of Infrastructure and Public Works	Public Works Department	<ul style="list-style-type: none"> <li>• Liaise and joined trip to Epi, Santo, Ambae, Pentecost, Aniwa and Pentecost islands to make baseline assessments</li> <li>• Information regarding similar projects and programs, such as VTSSP &amp; PACC</li> <li>• Worked with engineering consultants to advise on policy and practice, possible solutions to infrastructure problems caused or exacerbated by CC</li> </ul>
Ministry of Finance	Department of Finance	<ul style="list-style-type: none"> <li>• Inputs to the financial arrangement under the proposed implementation modality</li> </ul>
Ministry of Lands and Natural Resources	Department of Rural Water Supply	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Review of technical approaches</li> </ul>
Ministry of Education	Department of Education	<ul style="list-style-type: none"> <li>• Information on the existing climate / environment-related curriculum</li> <li>• Inputs for potential development of climate/disaster management related school curriculum</li> </ul>
Ministry of Agriculture, Fisheries and Forestry	Department of Forestry	<ul style="list-style-type: none"> <li>• Information on existing and future projects, staff and policies</li> <li>•</li> </ul>
	Department of Agriculture	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Information on existing and future projects, staff and policies</li> </ul>

Category	Institution / Stakeholder Group	Cooperation during PPG Phase
	Department of Fisheries	<ul style="list-style-type: none"> <li>• Data and information about donor-assisted initiatives in the fisheries sector, MMA/MPA management</li> <li>• Liaise for co-financing and arrangement</li> <li>• Participation in workshops and meetings</li> <li>• Inputs for management arrangement</li> </ul>
	Department of Livestock	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> </ul>
Provincial Government institutions	Torba Provincial Government Council	<ul style="list-style-type: none"> <li>• Participation, arrangement and facilitation of community assessments by Area Secretary on Hiu, Tegua, Metoma, Loh and Toka islands</li> <li>• Information on the Provincial level and Area Council development plans, village information</li> <li>• Input on project management structure from Assistant SG</li> </ul>
	Sanma Provincial Government Council	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• SG and relevant provincial officers provided input for management arrangements</li> <li>• Information on the Provincial level and Area Council development plans, village information</li> </ul>
	Malampa Provincial Government Council	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Participation, arrangement and facilitation of community assessments by Project Officer and Area Secretary of South Malekula</li> <li>• Information on the Provincial level and Area Council development plans, village information</li> <li>• Input on project management structure</li> </ul>
	Penama Provincial Government Council	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Participation, arrangement and facilitation of community assessments by Secretary General of Penama in North Ambae</li> <li>• Participation, arrangement and facilitation of community assessments by Provincial Planner in Central Pentecost</li> <li>• Information on the Provincial level and Area Council development plans, village information</li> <li>• Input on project management structure by Secretary General and relevant provincial staff</li> </ul>
	Shefa Provincial Government Council	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Participation, arrangement and facilitation of community assessments by District Administrative Officer on Epi and Area Secretary of Vermali Area Council</li> <li>• Information on the Provincial level and Area Council development plans, village information</li> <li>• Input on project management structure by Secretary General, District Administrative Officer and relevant provincial staff</li> </ul>
	Tafea Provincial Government Council	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Participation, arrangement and facilitation of community assessments by Area Secretary of Aniwa and Project Officer of Province</li> <li>• Information on the Provincial level and Area Council development plans, village information</li> <li>• Input on project management structure by Secretary General and Project Officer</li> </ul>
Local government, community representatives	Chiefly village councils	<ul style="list-style-type: none"> <li>• Validation of assumptions made in the PIF especially adaptation needs of communities</li> <li>• Feedback on the proposed activities and guidance</li> <li>• Participation in the baseline assessment</li> </ul>
	Ward councils	<ul style="list-style-type: none"> <li>• Unique to Penama Province- Feedback on the proposed activities and guidance</li> <li>• Provided data on vulnerabilities and priority needs</li> </ul>

Category	Institution / Stakeholder Group	Cooperation during PPG Phase
		<ul style="list-style-type: none"> <li>• Participation in the baseline assessment</li> </ul>
	District councils	<ul style="list-style-type: none"> <li>• Unique to Shefa Province- Feedback on the proposed activities and guidance</li> <li>• Provided data on vulnerabilities and priority needs</li> <li>• Participation in the baseline assessment</li> </ul>
	Area Council Representatives	<ul style="list-style-type: none"> <li>• Validation of assumptions made in the PIF especially adaptation needs of communities</li> <li>• Feedback on the proposed activities and guidance</li> <li>• Participation in workshops and meetings</li> </ul>
	Island-level Community Disaster Committees	<ul style="list-style-type: none"> <li>• Validation of the existing disaster management arrangement and community planning process</li> <li>• Current and future CDC plans and priorities</li> <li>• Participation in the Baseline Survey</li> </ul>
	Community groups (Island fisher's associations; women's groups; youth groups; Red Cross volunteers)	<ul style="list-style-type: none"> <li>• Participation in the Baseline Survey</li> <li>• Information</li> </ul>
NGOs and other national organizations	Red Cross	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Officer from Hiu island in Torres helped arrange facilitate community assessments on Hiu, Metoma, Tegua, Loh and Toka</li> <li>• Communication of travel itinerary to target communities via HF radio to prepare for community meetings</li> <li>• Co-financing discussion</li> </ul>
	CARE International	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Data on existing and future projects, staff</li> <li>• Co-financing discussion</li> <li>• Information</li> </ul>
	World Vision International	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Data on existing and future projects, staff</li> <li>• Co-financing discussion</li> <li>• Information</li> </ul>
	GIZ Climate Change Vanuatu	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Data on existing and future projects, staff</li> <li>• Information</li> </ul>
	Vanuatu Rural Training & Development Centre Association	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Specific meeting to discuss cooperation</li> </ul>
	VANGO	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> </ul>
	OxFam, V-CAN members	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Specific meeting to discuss cooperation</li> </ul>
Other related projects	VTSSP, C-CAP, MARSH, MESCAL, ADB-CTI; etc	<ul style="list-style-type: none"> <li>• Participation in workshops and meetings</li> <li>• Specific meeting to discuss cooperation</li> <li>• Identification of synergies</li> </ul>
Donors	EU, JICA, GIZ, World Bank, USAID, UNDP	<ul style="list-style-type: none"> <li>• Participation in Inception Meeting</li> <li>• Specific dialogues and discussions</li> </ul>

Category	Institution / Stakeholder Group	Cooperation during PPG Phase
		<ul style="list-style-type: none"> <li>• Planning meetings</li> </ul>



## 2 Strategy

### 2.1 Project rationale and policy conformity

89. V-CAP will comprehensively address three of eleven priorities identified in the NAPA. These include i) community-based marine resources management; ii) integrated coastal zone management; and iii) mainstreaming climate change into policy and national planning as outlined in the table below. Further, the NAPA places particular emphasis on the need for community-based marine resource management, embracing both traditional and modern practices, in enhancing the resilience of vulnerable coastal communities. In addition, it will complement NAPA priority 3 in scaling up and distributing results of climate proofing agriculture and will enhance approaches to water management as identified as NAPA priority 4.

Table 2: Priority Implementation Areas as identified in the NAPA, with areas of V-CAP intervention highlighted

No.	Priority Implementation Projects Identified in the NAPA	
1	Agriculture & food security (preservation/ processing/ marketing, modern & traditional practices, bartering)	
2	More resilient crop species including traditional varieties	
3	Land use planning and management (modern & traditional agricultural practices, early warning including traditional systems)	V-CAP with WB LDCF project
4	Water management policies/programs (including rainwater harvesting)	V-CAP in selected villages
5	Sustainable forestry management	
6	Community based marine resource management programs (modern & traditional/aquaculture)	V-CAP
7	Mainstream climate change considerations into infrastructure design and planning (modern & traditional, EIA)	V-CAP
8	Sustainable livestock farming and management	
9	Develop Integrated Coastal Zone Management (ICZM) programs, including mangroves & coastal flora management plan.	V-CAP
10	Sustainable tourism	
11	Vector & water borne disease activities (modern & traditional)	

90. To address these priorities, V-CAP will target a number of adaptation options outlined in the NAPA including: development of local adaptation and ICM plans, climate proofing of infrastructure, development of an efficient early warning system, awareness raising and capacity building, and coastal re-vegetation and rehabilitation. Such adaptation activities will help to promote food security, which the NAPA defines as an overarching goal of all adaptation activities. V-CAP adopts cross-sector and participatory approaches to promote action and learning at multiple levels. These approaches are also important in accounting for interaction between human activities, ecosystems, and biophysical processes.

91. The project is consistent with the overarching development framework for Vanuatu's Priority Action Agenda (PAA), which recognizes the need for accurate forewarning of climate-related disasters and improved coordination of national disaster management and climate change adaptation to prevent, respond to and recover from climate-related disasters.

92. The project also aligns with and promotes the implementation of the Draft National Integrated Coastal Management Framework (NICMF) developed to assist responsible national agencies and other concerned stakeholders better coordinate their activities to enhance management of the coastal zone and strengthen the resilience of coastal communities. In addition to climate change adaptation-specific policy and implementation actions, there are a series of policy initiatives that guide relevant sectors that V-CAP adheres to and supports in various ways. These include: the Fisheries Act, the National Biodiversity Strategy and Action Plan (NBSAP), the Decentralization Act and amendment (2013), and various guidance provided by National Disaster Management Office (NDMO).

### 2.2 Country ownership, eligibility and drivenness

93. The Republic of Vanuatu ratified the UN Framework Convention on Climate Change (UNFCCC) on 9<sup>th</sup> March 1993. The Initial National Communication (INC) to the UNFCCC on 30<sup>th</sup> October 1999. The design

of the project is in line with the priority activities identified in the NAPA and will address components 6, 7 and 9 of the NAPA. In

94. The project will catalyze and leverage additional co-financing resources from domestic, bilateral and other multilateral sources. The project requests the LDCF to finance the additional costs of achieving sustainable development imposed on LDCF eligible countries by the impacts of climate change. It is country-driven, cost-effective, and will integrate climate change risk considerations into the development of livelihoods, disaster risk reduction and national budget allocation processes particularly to the outer islands, which are priority interventions eligible under LDCF guidelines.

95. In addition, V-CAP aligns with the National Climate Change Adaptation Strategy for Land-Based Resources (2012 – 2022) Second Draft. It will catalyze government agencies with field and extension workers to enhance their efforts to deliver local climate change adaption solutions to build community resilience.

96. The project aligns with other LDCF funded initiatives including the World Bank “Increasing Resilience to Climate Change and Natural Hazards Project” (ICCCNH) which addresses NAPA Priorities 2, 3 and 5. Priority 1 will be covered under a proposed FAO project and activities in Priority 4 included in a REDD proposal submitted to the Forest Carbon Partnership Fund. The PPG team consulted with the World Bank team in-country and identified synergies and cooperative activities as outlined in the project description section. In addition, consulted with the ABD PPG team on their specific LDCF funded intervention.

97. V-CAP is also aligned with LDCF Objective CCA-1 “Reducing vulnerability to adverse impacts of climate change, including variability, at local, national, regional and global level”, and CCA-2, “Increasing adaptive capacity to respond to the impacts of climate change, including variability, at local, national regional and global level”. The alignment with the LDCF RBM Framework is presented in Project Results Framework.

98. In relation to overall development planning frameworks, V-CAP will be country driven, nationally implemented and will support the main objectives of the PAA for Vanuatu 2006 to 2015. The on-the-ground efforts of V-CAP will also contribute to the Government of Vanuatu progress in achieving Millennium Development Goals (MDGs).

99. In relation to climate change, V-CAP will address the key priorities identified in Vanuatu’s National Action Plan for Disaster Risk Reduction. The urgent and immediate adaptation needs described in the NAPA were identified through an exhaustive participatory process with stakeholders at national, regional and community levels and will form the bulk of the project’s investments.

100. The timing of V-CAP implementation is optimal given the government’s current focus on decentralization (as per the Decentralization Act Amendment 2013). As such, V-CAP has excellent strategic potential to strengthen Area Councils in target provinces and also to trial/promote mainstreaming and integration of climate change adaption approaches into community and AC planning processes.

101. During project design consultations with representative stakeholders (including provincial staff, area council members and communities), the PPG noted very strong support for the V-CAP approach, particularly in relation to providing entry level support to community climate change adaptation initiatives. The bottom-up approach to project design ensured that both communities and officials were part of the design process, thereby enhancing their interest and desire to participate in project implementation. Results of the consultation process are outlined in the various attachments and specifically in consultation log, site profiles and Gender and Social Inclusion Strategy, Annexes 4 and 5.

102. Consultations were also held with development partners in Port Vila and various island locations in order to inform development partners about the project, and identify areas of cooperation and alignment and to ensure duplication of efforts is avoided. These consultations were both positive and useful in identifying the importance of delivering community-based and community-driven solutions that build on successful activities to date. This included the World Bank, GIZ, PACC, AusAID and related projects within the Ministry of Climate Change. In particular, these projects were enthusiastic about V-CAP implementing CCA technical solutions that had been developed through various demonstration and pilot projects.

103. International NGOs (INGOs) and national NGOs were also enthusiastic about the integrated V-CAP approach and many expressed interest in being part of project implementation. A number of these organizations are already working on community approaches to climate change adaptation along sectoral lines, i.e. DRR or fisheries. As such, there are opportunities for V-CAP to involve some of these organisations in on-the-ground delivery in specific sector and geographic locations as indicated in the following sections. In addition, the Vanuatu Climate Adaptation Network (V-CAN) provides an excellent opportunity to coordinate with the NGO sectors.

104. The combination of in-depth consultations with outer island communities, extensive bilateral discussions with key stakeholders based in Port Vila as well as discussions with numerous regional

stakeholders provided a solid basis for designing the activities put forward in this proposal. These consultations have raised awareness of V-CAP which will assist the implementation process.

## 2.3 Design principles and strategic considerations

105. The key objective of the V-CAP PPG was to design a project that was country/community-driven and provided realistic solutions to climate change adaptation in response to the needs of the most vulnerable communities and people in Vanuatu.

106. The original PIF identified a number of possible sites for implementation of Component 1 based on specific CCA related issues. At the Inception workshop a process was identified to review and revise site selection through a set of agreed criteria. The criteria and selection process is outline in Annex 5. However, the panel undertaking site selection identified important criteria including the need to target coastal communities with a focus on smaller islands, with a stable of growing population, with a focus meeting the needs of marginalized and supporting access to services, particularly in relation to disaster risk reduction. In addition, where possible within the list of proposed sites, link to on-going development projects, for example the Vanuatu Transport Sector Support Program (VTSSP), and seek to identify sites with expansion and replication potential. Focus on sites with a high dependence on the coastal zone for livelihoods that are vulnerable to coastal flooding, sea level rise and other climate change impacts. In addition, use on existing studies if possible and focus on sites identified in the NAPA. The V-CAP PPG team worked closely with the Government to identify six target sites through this process and needs assessments as outlined below and described in Annex 5.

107. Through the process above, target areas were then narrowed down to 1-2 sites for each of the six provinces. Additional consultations were then held with senior government officials to ensure these sites were in accord with current development priorities and plans. Representatives of the PPG team then met with provincial and Area Council representatives to identify key issues and the communities to be included and the boundaries for each of the V-CAP target sites.

108. A specific focus on the consultations was to identify the baseline, particularly at the community level, and the incremental costs of building resilience to climate change to be funded by LDCF. It was very clear that communities were already experiencing what could be considered as climate related impacts that these were likely to become worse under the CC scenarios. Given the limited level of government resources available for building resilience to CC the specific activities identified by the PPG for LDCF support are clearly focused on directly providing adaption solutions for communities at the village level. The LDCF support was considered as crucial to securing livelihood assets to build resilience to CC by the 1.827 community members consulted.

109. The PPG Team conducted an assessment of each target site. This process included discussions with the province, district (in Shefa), ward (in Penama), representatives of all local Area Councils, and villagers from communities within the targeted area. These meetings were followed by formal consultations through community meetings with as many communities as possible within the identified proposed sites-typically meetings were held with at least 80% of all targeted communities. In addition, the PPG Team undertook field surveys which included rapid marine surveys of coral reefs, village assessments with community leaders and key informants and visits to the upland areas to evaluate water sources and upland management issues.

110. The sites for specific actions are outlined in the table below. Annexes 6 and 7 provide a description of each of the sites, information on the consultation process and key community recommendations for activities to enhance community resilience to climate change in each of the sites.

Province	Shefa	Sanma	Penama	Tafea	Malampa	Torba
Island	Epi	Santo	Pentecost	Tafea outer islands	Malekula	Torres
Area Councils (AC)	Vermali and Vermaul AC's	South Santo 2 AC and portion of South Santo 1 AC	Central Pentecost 1 & 2 AC's	Aniwa, Futuna, Aneityum & Erromango (2 AC's)	South Malekula AC	Torres AC
Site boundaries	West coast Road from Mavilao to Rovo Bay extending to catchment	Wailapa to Asevae extending into the upper catchment	East Coast of CP2 AC to ridge & then down to the Kumreut along the West Coast and Bwatnapni of CP1 AC	Whole islands	Akam Island, Farun, Okai to Maskelynn / Vao islands	All islands within Torres group

111. A key underlying principle in the delivery of V-CAP is to build on existing coping strategies of rural communities who have a long history of responding to geological and climate variability and change, with varying success. These short-term coping strategies form the basis of successful long-term adaptation strategies. However, care needs to be taken as some of these traditional coping strategies could prove to be unsustainable over time as climate change progresses leading to a greater risk of maladaptation. Innovative approaches and new technologies, along with careful monitoring of the effectiveness of strategies in view of changing circumstances is needed to ensure these adaptation strategies remain appropriate. Rural communities are therefore the key actors for implementing adaptation strategies and hard-won lessons can be learned, communicated and fed into adaptation decision making at higher levels to benefit the nation.

112. The V-CAP approach represents a comprehensive approach to CCA by encompassing communities, area councils and provincial and national mechanisms. In this way V-CAP is not a standalone project, but rather supports existing government plans, policies and procedures with the long-term objective of building local and national level capacity and expanding this approach to other programs.

### ***Strategic considerations***

113. At the strategic and project management level, V-CAP will continue to support the efforts of the Government to strengthen the NAB and the PMU. It will also consolidate the various approaches of the PMU to guide future development of community-based climate change adaptation and planning.

114. A key strategic consideration in the design of the VV-CAP is to strengthen and support the ongoing decentralization efforts of the Government of Vanuatu to deliver concrete adaptation benefits in alignment with priorities identified in the Vanuatu NAPA and ensure concrete activities on the ground to support climate change at community levels.

115. V-CAP will be built upon existing government and development partner initiatives to ensure that information gathered, processes adopted, and lessons learned in the myriad of current and proposed CC projects are reviewed and adopted, as appropriate, for use by local communities in V-CAP sites. This will involve scaling up of existing initiatives and provide cost-savings for V-CAP by adopting adaptation solutions that have already been trialed and proved successful.

116. V-CAP will also respond to a strong need identified in each provincial level consultation; that is to increase provision of technical support through field-based staff to communities and ACs in delivering on government priorities. All provinces expressed concern over the low number of field extension staff and their extremely limited budgets. Communities expressed a similar concern and sought V-CAP support in the delivery of basic extension services, particularly in outer islands where transport is both difficult and expensive.

117. Capacity building is considered a strategic and critical cross-cutting aspect of the V-CAP design. The project aims is to build long-term capacity for the implementation of climate change solutions at all levels, with a particular focus on addressing constraints under which communities and local government currently operate.

118. Another significant strategic consideration in the design of V-CAP was the respect of traditional governance systems and the need to strengthen these systems at community level while also ensuring that all community members - including women, youth, children, the elderly and persons with disabilities are able to fully participate and benefit from the project.

119. Lessons learned and best practice approaches from implementation of V-CAP are expected to provide important insight for Government and non-governmental agencies as they continue to support climate change adaptation processes and attract climate financing from international sources. In particular, the overall lessons from V-CAP will feed into implementation and evaluation of the NAPA and the formulation of the next national development strategy.

### **2.3.1 Gender and social inclusion considerations**

120. Climate change is a serious sustainable development issue with broad impacts on economic and social development and with variable effects on different social groups. Global experience has shown that climate change challenges are *not* gender or generation neutral. Increases in extreme weather conditions (including droughts, cyclones and floods) serve to accentuate and accelerate risks to the most vulnerable and least empowered people in society including women, children, older people and persons with disabilities. Given Vanuatu's ranking as one of the world's most vulnerable countries, the impacts of climate change on Vanuatu's most vulnerable people are likely to be even more extreme - hence the urgent need for safeguarding through proactive resilience investment.

121. The Project Identification Form (PIF) states that V-CAP will: “strive to promote gender equality in both planning and execution of the proposed components to ensure that men and women benefit equally from targeted interventions”. This will involve activities that actively encourage the participation of women in community and policy-oriented activities to address “the different vulnerabilities according to gender, culture and other characteristics” (interpreted to mean age, mobility and overall wellness issues) that influence people’s capacity to prepare for and respond to climate change and related disasters. The PIF also specifies the need to ensure that vulnerable groups have access to early warning and climate related information and that gender (and social inclusion) is incorporated as an explicit variable in V-CAP monitoring and evaluation.

122. The specific climate related issues of most relevance and concern to women, youth/children and persons with disabilities resident in identified V-CAP areas were carefully considered during project design through an extensive community consultation process, combined with key informant interviews and a comprehensive literature review. In total, 719 women, youth and other marginalized persons were consulted across all six provinces. The consultation process focused on assessing gender and age differential impacts of climate change due to socially ascribed roles and responsibilities. The primary findings arising from the gender and social inclusion analysis, along with a summary of project interventions are outlined below. In addition to these specific activities aimed at redressing existing inequities and vulnerabilities, gender will also be mainstreamed in all V-CAP interventions from planning and implementation through to monitoring of activities using gender and social inclusive indicators.

### **Women**

123. The primary concerns expressed by women in V-CAP target areas included:

- Food Security: increasing population, invasive species, crop quality and increased spoilage, reduced fisheries
- Clean, accessible water supply
- Access to health and education services during the wet season
- Access to markets and the economic viability of producing/transporting food crops to market for sale; and
- Lack of voice in local level decision-making processes.

124. Because of their responsibility to secure food and water, energy for cooking and income from market sales and the production of local crafts, women in rural areas in Vanuatu are highly dependent on local natural resources for their family’s health and livelihood. Combined with the rapidly increasing population in all V-CAP sites, the effects of climate change are making it harder to secure these resources resulting in longer work days for women, less financial resources and negative repercussions on family health and well-being due to food and water insecurity and restricted access to basic services and markets.

125. In Vanuatu, women also face socio-cultural and political disadvantage arising from their limited access to economic assets and decision-making processes which further compound development and climate change challenges. Traditional leadership structures generally do not involve women, who are also highly unrepresented at all levels of government. Of significant concern, the NAPA is completely silent on gender and social inclusion issues. As such, it is imperative that women’s and men’s specific needs and priorities are collectively identified and addressed throughout the project cycle, including the requirement that women be actively involved in activity planning and monitoring.

### **Children (to age 14 years)**

126. Likewise, research and experience has shown that children in developing countries are being significantly impacted by climate change. In unequivocal terms, the 2008 UNICEF *Innocenti Research Centre’s* landmark study titled *Climate Change and Children* states that, “many of the main killers of children (malaria, diarrhea and under nutrition) are “highly sensitive to climate conditions”<sup>17</sup>.

127. A subsequent report titled *Climate Change and Children in the Pacific Islands* (2010)<sup>18</sup> assessed the various ways in which climate change is delaying the attainment of development objectives for children as specified in the Millennium Development Goals (MDGs) and the Convention on the Rights of the Child (CRC) in Vanuatu and other Pacific countries. According to the four primary sets of children’s rights as set forth in the CRC (see below) the following climate change impacts were sighted, many of which were also reported by stakeholders during V-CAP consultations.

---

<sup>17</sup> Innocenti Research Centre: *Climate Change and Children: A Human Security Challenge* (UNICEF, 2008, p.3)

<sup>18</sup> Report submitted to UNICEF Pacific from the Nossal Institute for Global Health, University of Melbourne, April 2010.

- **Survival:** Health issues caused by vector-borne diseases like malaria and dengue fever; heat stress; acute respiratory infections; water and sanitation concerns caused by unsafe drinking water and water borne diseases; water storage, security and sanitation; nutrition issues stemming from insufficient or poor quality food.
  - **Development:** Decreases in school attendance and educational attainment due to weather induced access issues; school closure due to infrastructure not being climate-proofed; lack of water; natural disasters, displacement and labour mobility.
  - **Protection:** Drop in birth registration due to access issues; child protection consequences related to overcrowded housing and high mobility resulting from flooding and natural disasters; injury/death due to unsafe river/ocean crossings.
- Participation:** Children becoming more aware of potential impacts of climate change on their lives and futures but limited opportunities for involvement in decision-making or participation in adaptation initiatives.

128. The primary climate change issues impacting children in V-CAP sites, as reported by parents (in particular mothers), school, church and health care personal included:

- Increase in water borne illnesses such as diarrhea
- Water shortages leading to dehydration and skin disorders
- Re-emerging increase in malaria, induced by increased precipitation and population
- Decreasing supply of high quality local foods, due to soil erosion, crop spoilage, over-fishing and increased population, being replaced by less nutritious western goods like white rice and bread
- Restricted access to schools due to dangerous river crossings during rainy season resulting in increased absenteeism, and
- Restricted access to health care centers resulting in children not being regularly immunized or treated for illnesses in a timely manner.

129. The project will address climate change issues seriously affecting facing women, children and families through a range of Component 1 activities including; improved pedestrian infrastructure allowing safe passage to schools and health centers; training for parents on WASH and nutrition; improved water quality and supply and upland and coastal management training to ensure sustainable food supplies. The project will also undertake a series of activities under Component to increase children's understanding of climate change issues and impacts and the actions they can take to build resilience and safeguard their futures.

### **Youth (about ages 15 to 24 years)**

130. In general, the youth consulted reported a high degree of concern about current and future impacts of climate change. In general, they are well aware of declining food supplies, water quality issues, invasive maritime and terrestrial species and the non-economic value of traditional income earning crops such as copra. Most expressed frustration regarding their inability to make money and/or be meaningfully involved in community activities. In almost all V-CAP sites, youth requested opportunities for training and income generation opportunities.

131. The challenge for V-CAP will be to capitalize on the interest of youth in climate change while also providing them with opportunities to learn new skills and address their strong desire to earn income. In this regard, the Gender and Social Inclusion Strategy outlines a range of youth focused climate change interventions including: establishing Climate Change Clubs; agricultural training provided through the Young Farmers Association; engaging young people enrolled in Rural Training Centers to construct pedestrian bridges and walkways in dangerous crossings where access to services is impeded; employing youth to remove Crown of Thorns Starfish and other destructive marine and terrestrial invasive species. All of these initiatives should be carried out in a manner that builds leadership skills and the capacity of young people to be environmental advocates and activists.

132. While the rapidly increasing rural population is not a climate change issue in itself, the consequences for sustainable coastal zone management, including food security, water supply and migration are enormous. As such, project implementation could be strengthened by integrating family planning as a component of WASH and/or other V-CAP training initiatives that target young people through linkages with the Ministry of Health and/or NGOs.

### **People with Disabilities**

133. Experience has shown that climate change and disaster planning often ignore people living with disabilities with one regional report noting: "these processes are blind to the existence and needs of the disabled community". Meeting the needs of people with disabilities is further challenged by the fact that governments often do not have good information regarding the number/kind of disabilities present in



particular communities as families tend not to provide full information due to social stigma and/or the absence of services available even if they did report. As much as possible, V-CAP planning processes will include disabled people, organisations and/or advocates to ensure that the specific needs of the disabled are differentiated and addressed in Component 1 (*Targeted community approaches to CC adaptation*) activities.

134. In Pacific communities, early warning systems (EWS) and communications regarding hazards tend to use a generalist, one size fits all approach that does not cater for the specific needs of the physically or intellectually challenged. While new technologies and information systems (such as smart phones, tablets and social media) are providing opportunities to relay information beyond traditional means, this equipment is expensive and generally relies on internet technology which is currently either inaccessible or unreliable in remote Vanuatu. V-CAP Component 2 (*Support information and early warning systems*) activities will take into account the needs of disabled people, as well as older and less ambient members of communities in establishing early warning and communication systems. Similarly, the project will attempt to ensure that the views and needs of people with disabilities are incorporated in Component 3 activities (*Strengthen climate change governance*) through work with provincial planners and Area Councils.

### **Gender and Social Inclusion Strategy**

135. The *Gender and Social Inclusion Strategy* (see Annex 8) details strategies for mainstreaming gender equity and social inclusiveness across all V-CAP components. It also outlines specific interventions (see below) designed to address key inclusion constraints. To maximize effectiveness and efficiency, areas for collaboration and co-financing with development partners and civil society are identified and strongly encouraged. V-CAP gender and social inclusion activities include:

- i) Training for women and youth on a range of farming, fishing and food security adaptation techniques;
- ii) Provision of community-based WASH programs to address water and sanitation concerns;
- iii) Development of public conveyance infrastructure to ensure river-crossing safety and improve access to services and markets;
- iv) Engagement of youth in coastal zone management activities including removal of invasive species and skills training in construction and maintenance of conveyance infrastructure and water system;
- v) Establishment of climate change clubs to educate young people and encourage their active involvement in community/school/church adaptation efforts;
- vi) Climate proofing of marketplaces and public buildings which are essential to women and children's health and education and to family livelihoods;
- vii) In collaboration with UN Women, expand the current Markets for Change Project to include women residing at in at least two V-CAP sites to ensure safe and economic access to district markets for improved livelihoods as per the project aim of reduced poverty;
- viii) Involve women, youth and persons with disabilities in Area Council and community planning forums on climate change to ensure that the views of vulnerable people are represented and their needs addressed, and to build capacity for localized planning and management in line with the current decentralization process;
- ix) Ensure that community disaster plans and early warning system interventions are inclusive of the needs of persons requiring special assistance in emergency situations including children, older people, and those with disabilities;
- x) As needed and requested, work with national and provincial agencies to strengthen gender and social inclusion aspects of climate change policies and procedures, including work with the PMU on "gendering the NAPA";
- xi) Employ an International "Gender, Planning and Monitoring and Evaluation Advisor" as a key member of the Project Management Unit. This position will ensure that gender and social inclusion approaches, strategies and interventions are fully mainstreamed and that the project M&E system adequately incorporates social inclusion indicators and targets; and
- xii) Models gender equity through the engagement of female and male staff in project management positions.

### **2.3.2 UNDP's Comparative Advantage**

136. UNDP is ideally positioned to support the Government of Vanuatu implement V-CAP through the National Implementation Modality (NIM). The project directly aligns the UN Development Assistance Framework (UNDAF) for Pacific Island Countries 2013-2017 by focusing on improved resilience, with particular focus on communities through implementing Strategic Focus Outcome 1: environmental management, climate and disaster risk management, in support of an integrated approach to environmental sustainability and efforts by governments and communities to adapt to climate change and reduce and manage disaster risk.

137. UNDP is supporting the Government of Vanuatu in climate change adaptation through a number of projects. Firstly the Pacific Risk Resilience (PRR) program, which is assisting the Government develop appropriate governance mechanisms to support climate change adaptation and will operate from 2013-2017. Secondly UNDP plays an important role in supporting the UN Joint Project on "Community Resilience and Coping with Climate Change and Natural Disasters in Vanuatu, 2011 – 2014/5" which provided a range of

lessons during the PPG phase. Thirdly, the Government of Vanuatu is implementing the UNDP supported “Pacific Adaptation to Climate Change (PACC) Project” which works with communities on Epi Island on climate change adaptation. The V-CAP PPG team established links with each of these initiatives and identified suitable mechanisms for coordination and collaboration and to ensure no overlap in project delivery. The lessons learned from implementation of these projects have been incorporated in the C-CAP design.

138. In addition to the climate change portfolio, UNDP has been supporting the Department of Environment Protection and Conservation in meeting global environmental agreements and assisting the countries in a range of capacity building exercises. UNDP has also implemented other GEF projects in Vanuatu. In addition, UNDP collaborates with Vanuatu Association of NGOs (VANGO) in the delivery of the Small Grant Program (SGP).

139. UNDP has a Program Officer based in Port Villa, Vanuatu, for the last 10 years and is assisting the Government in a number of other areas including governance and a range of sustainable development themes. There are plans to strengthen the Vanuatu Program Office over the next few years.

140. Support from UNDP for V-CAP implementation will be operational, administrative and technical in nature. The resident Vanuatu Program Officer in Vanuatu will interface on a regular basis with the Government of Vanuatu and the project team. The UNDP Fiji Multi Country Office based in Suva, Fiji will have primary responsibility for the provision and delivery of operational and administrative support. The UNDP Asia Pacific Regional Centre in Bangkok will have a dedicated Regional Technical Adviser to focus on supporting adaptation programming which will provide technical oversight. At the Global level, UNDP has a network of global Senior and Principal Technical Advisors to provide additional technical oversight and leadership to ensure UNDP activities achieve maximum impacts. Through its global networks, UNDP can broker knowledge, information, and technical resources on climate change adaptation initiatives into the V-CAP efforts.

## 2.4 Project Objective, Outcomes and Outputs/activities

141. The overarching goal of V-CAP is to increase resilience of island communities to future climate change induced risks such as declining coastal and marine resources, intensifying climatic hazards and lack of awareness. The overall objective of the project is to improve the resilience of the coastal zone and its communities to the impacts of climate change in order to sustain livelihoods, food production and preserve and improve the quality of life in targeted vulnerable areas.

142. The project will achieve this objective through the following set of outcomes. The activities to achieve each of these four outcomes are outlined in the following section.

**Component 1:** Integrated community approaches to climate change adaptation developed and implemented through:

Outcome 1.1: Integrated Community level CC-Adaptation plans mainstreamed in the coastal zone

Outcome 1.2: Improved climate resilience of coastal areas through integrated approaches

**Component 2:** Information and early warning systems on coastal hazards

Outcome 2.1: Reduced exposure to flood-related risks and hazards in the target coastal communities

**Component 3:** Climate Change Governance

Outcome 3.1: Climate change adaptation enabling policies and supportive institutions in place

Outcome 3.2: Human resources in place at the national, provincial and community levels

**Component 4:** Knowledge management

Outcome 4.1: Increased awareness and ownership of climate risk reduction processes at the national and local levels.

## 2.5 The 4 Components of V-CAP

### 2.5.1 Component 1: Integrated community approaches to climate change adaptation

#### OUTCOME 1: Integrated Community Approaches to Climate Change Adaptation

Co-financing amounts for Outcome 1:

GoV - PWD	\$ 14,000,000
GoV -DLA	\$ 2,200,000
GoV -Do Fisheries	\$ 1,080,341
GOV -DEPC	\$ 150,000
VANGO	\$ 74,000
AusAID (VTSSP2)	\$ 3,921,568

Estimated Total co-financing:	\$ 21,425,909
LDCF project grant requested:	\$ 6,000,000

**Output 1.1** CC adaptation plans, including risk management, preparedness and response plans, formulated in the context of ICM and in relation to site-specific vulnerabilities, subsequently adopted and mainstreamed in planning processes

#### **Baseline (without LDCF intervention)**

143. Rural communities throughout Vanuatu, especially those based on “outer” or more remote islands are heavily dependent on subsistence practices for their livelihoods. The 2009 Census indicates that 76% percent of the country’s population resides in rural communities where approximately 90% of households consume home produce on a daily basis (from subsistence fishing, farming, hunting and livestock practices). Fishing is the second most important source of subsistence income after agriculture.

#### **Limited capacity to deliver decentralized planning**

144. The formation and recognition of Area Councils under the supervision of the Provincial Governments was enacted by the Vanuatu National Government through an Amendment to the Decentralization Act (2013) which was legislated during the First Extra-Ordinary sitting of the National Parliament in August 2013. These local Area Councils are “the grassroots bodies of government”, and are intended to have an immediate presence amongst rural communities, and will be allocated a limited budget to ensure that service delivery is more equitably distributed throughout rural Vanuatu. Area Councils will be comprised of villagers

and community members living within identified AC boundaries including designated representatives for certain groups of people including chiefs, women and youth. While this is an important and potentially positive change in the delivery of government services for communities, there are substantial challenges in the development of implementation of this new policy approach. For instance, there is a lack of operational models regarding vertical and horizontal integration in planning processes and a significant lack of human resource capacity at all levels including local, provincial and national. As such, the government will struggle with the delivery of this program in the upcoming years. V-CAP has an opportunity to assist the government throughout this transition to enable more holistic development planning and implementation with a strong on building local level resilience to climate change at the AC level.

145. At the provincial level, there is a lack of integrated holistic planning. Existing provincial plans often focus on infrastructure development and attracting investment and are developed in a top-down manner with little integration of community concerns. Most provinces reported to the PPG that they were in the process of developing their next Provincial Strategic Plan, although two provincial governments had already created plans for the next 3-5 year period. However, these plans could be considerably strengthened through integration of climate change adaption approaches and methodologies.

146. There is also a lack of holistic planning at community level. There are a range of levels of planning occurring at the community level, often involving various chiefly councils, Community Disaster Committee (CDC's), Education Committees, Water Committees, etc, in V-CAP target communities. The majority of communities consulted did not have any formalized village level planning process. The same challenges regarding the lack of planning were present at Area Council level as well. In some communities, especially those where International NGO's were carrying out DRR activities, village level planning initiatives were taking place however they focused on specific themes, in particular DRR or water security and were not integrated or mainstreamed into an overall community planning process. Without additional resources focused on building community and Area Council capacity, the lack of integrated planning is likely to continue.

147. In many communities a wide range of existing committees exist including; Chiefly Committees, Community Disaster Committees, Water Management Committees, Education Committees, Women's Committees, Youth Committees, Health Committees, Church Committees etc. Often it is the same individuals who serve on these various committees and given this sector or topic-specific approach, opportunities for integration and for mainstreaming issues such building climate change resilience are missed. As such, it is essential that an integrated approach to CCA planning is adopted to address climate issues from all perspectives.

148. At the Area Council level, the recent Amendment to the Decentralisation Act is in the process of being rolled out. This Amendment ties allocation of funds to the Local Area Councils for the specific implementation of actions within that ACs' boundaries. Previous to this amendment, many communities had complained that certain AC's were neglected and rarely received government service delivery or even benefited from provincial government expenditure. However, the level of funding allocated to each Area Council is nominal (often in the range of US\$500 to \$5,000 per year) and in some cases such as the Torres Islands, is barely enough to meet the transport cost of the Area Secretary to visit each of the Islands in his jurisdiction 1-2 times / year.

#### ***Lack of expansion of pilot approaches from demonstration sites***

149. There are a number of donor funded projects being implemented in rural communities aimed at addressing the effects of climate change which are delivered by both government, non-state agencies and other development partners. Frequently these initiatives take the form of "pilots" or "demonstration projects" which are useful in addressing climate change related challenges at community level. For example, GIZ and their partners have developed over 15 different community-based adaptation tools and strategies through pilot initiatives. The GEF / World Bank project will be doing the same with support to the agricultural sector. However, scaling up is challenging given the limited resources available. As such, V-CAP provides a pivotal opportunity to upscale successful pilots for deployment in targeted communities.

150. The NDMO and a number of International NGO's (including CARE International, the Red Cross and World Vision International) are active in supporting the establishment of Community Disaster Committees in selected areas of Vanuatu and in the V-CAP sites. However, the concern was expressed by NDMO, its partners and by communities themselves about the need for on-going community engagement after these plans are developed. A plan is of no use unless it is implemented. Implementation typically requires resources, such as training, pilot demonstrations and equipment as identified. As such, there is an opportunity for V-CAP to strengthen DRR planning processes to ensure the communities are aware of disaster plans and that these plans are regularly reviewed, updated and able to be implemented as needed in response to a situation requiring its implementation.

### **Adaptation alternatives (with LDCF intervention):**

151. V-CAP will focus on the delivery of fully integrated approaches to coastal community adaptation that build resilience to climate change in Area Councils in all six-provinces of Vanuatu. These sites will demonstrate fully integrated planning, implementation and monitoring processes from community to Area Council level, that are effectively linked with provincial development planning processes.

152. The V-CAP PPG team worked closely with the Government to select six target areas for V-CAP implementation of support to build climate change resilience. This was based on a comprehensive site selection process as described above in Section 2.3 and Annex 5. Site selection was based on an initial site list (as outlined in the V-CAP PIF) which was further refined through screening with senior officials at the PPG Inception Workshop and finally through consultations with provincial and national authorities prior to, during and following site visits.

153. The assessment during the PPG phase for each target site included discussions with the province, district (in Shefa), ward (in Penama), representatives of all Local Area Councils, and villagers from each community within the targeted area. The list of consultations is provided in Annex 4.

154. The selected sites are outlined in the table below. A more details description of each of the sites is contained in Annexes 6 and 7. Immediate beneficiaries are those individuals living in communities where V-CAP will support village and community level CC vulnerability planning. On the other hand, additional beneficiaries constitute those individuals from communities that will be benefit from the intervention, e.g. will use rehabilitated roads to get to markets and to access health facilities.

Province	Shefa	Sanma	Penama	Tafea	Malampa	Torba
Island Grouping	Epi	Santo	Pentecost	Tafea islands	Outer Malekula	Torres
Area Councils (AC)	2 Area Council • Vermali  • Vermaul	2 Area Councils  • South Santo 2 • South Santo 1 – small portion	2 Area Council  • Central Pentecost 2 • Central Pentecost 1 – small portion	5 Area Councils  • Aniwa, • Futuna • Aneityum • Erromango (2)	1 Area Council  • South Malekula	1 Area Council  • Torres
Site boundaries	West coast Road from Mavilao to Rovo Bay extending to catchment	Wailapa to Asevaia extending into the upper catchment, w Araki & Tangoa islands	East Coast of CP2 AC to ridge & West Coast, Bwatnapni of CP1 AC down to “Waterfall”	4 separate islands –with 1-2 Area Councils / island	Akam Island, Farun, Okai to Maskelynnne / Vao islands	All islands within Torres Group
Villages communities /	5 communities in 10+ villages on one island	4 communities in 7 village on 3 islands	9 communities in 18 villages on one island	4 communities in 10 villages on 4 islands	5 communities in 7 villages on 4 islands	5 communities in 10 villages on 5 islands
Immediate Beneficiary	1,324	893	2,897	3,741	2,489	931
Additional Beneficiary	4,323	6,305	3,590	-	3,152	-
Total	5,647 2,835 – male 2,812 – female	7,198 3,692 – male 3,506 – female	6,487 3,240 – male 3,247 – female	3,741 1,878 – male 1,863 - female	5,641 2,838– male 2,803– female	931 440 – male 491– female
Major marine and coastal CCA threats	• Ecosystem degradation • COTs • Overfishing	• Ecosystem degradation • Water pollution • Overfishing	• Ecosystem degradation • Water pollution • Overfishing • COTS	• Ecosystem degradation • Overfishing • COTS	• Coastal erosion • Overfishing • COTS • MPA / CCA support	• Species manageme nt • Overfishing • MPA / CCA support
Major upland CCA threats	• Water supply • Erosion • Sediment run-off • Marine and coastal • Agriculture diseases	• Severe erosion • Upland erosion and water quality • Agriculture diseases	• Severe erosion • Upland erosion and water quality • Agriculture diseases • WASH	• Severe erosion • Upland erosion and water quality • Agriculture diseases and introduced pests	• Severe erosion • Water quality • Agriculture diseases • Increasing population / re-location	• Upland erosion and water quality • Agriculture diseases • Alien species / pests
Major investments for climate proofing of	• Roads • Bridges	• Pedestrian crossings on major roads	• Road rehabilitation • Major	• Climate proofing of walking tracks	• Rehabilitation of road linkage from	• Water catchment needed

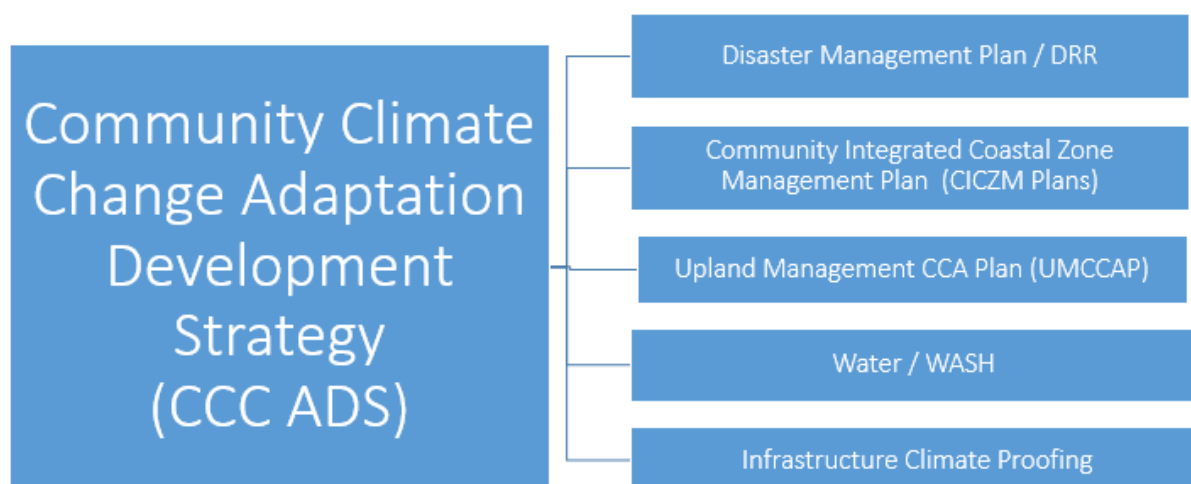
infrastructure	<ul style="list-style-type: none"> <li>• Water crossings</li> <li>• Water supply and WASH</li> </ul>		rehabilitation of walking tracks		main road Okai	
----------------	--	--	----------------------------------	--	----------------	--

155. In particular, V-CAP will build upon the initial vulnerability assessments conducted during the PPG to support village-based climate change adaptation planning through a more detailed vulnerability assessment process. This will form the basis for detailed and holistic climate change adaptation planning and implementation to be integrated into village level development planning. Vulnerability assessments will focus on identifying the key risks facing communities in relation to climate change and build upon the PPG baselines as outlined in Annex 7<sup>19</sup>. Based on the results of these assessments, a comprehensive Community Coastal Climate Change Adaptation Strategy (CCCCADS) will be developed which includes risk management, preparedness and response. The CCCCCADS will clearly identify issues, threats, opportunities and proposed solutions to address the impacts of climate change in each community. These plans will be developed with the active engagement of the chiefly system, area secretaries, village and church leaders and the wider community, including women and youth representatives. This Strategy will form the overall basis of development planning at the village level.

156. At the village level, Community Disaster Committees (CDC's) — grassroots level committees recognized by the national government through the National Disaster Management Office — will be utilized to integrate CC adaptation components to the community's existing Disaster Risk Reduction (DRR) plans. Similarly, the Water Committee will be link to provide inputs into Water Plans.

157. The CCCAD Strategy will be developed in a holistic manner to address both the threats to climate change on the natural resources that communities depend upon, and will focus on a number of different elements including upland management, management of water and water sources, coastal and marine area management, DRR and management of infrastructure. In some villages physical planning to address household and community infrastructure in areas classified as highly vulnerable to CC will also be undertaken.

158. The holistic planning process used to develop CCCAD Strategies will also address the need to link with the village committees to ensure an integrated community development approach. Because CCCAD Strategies will be developed with specific targets, indicators and outputs to ensure their effective delivery, this will serve to build the capacity of other local committees whose members participate in CCCADS planning processes.



159. At the AC level, technical support will be provided to the Local Area Council, with a specific focus on building the capacity of the Local Area Secretary, to develop an Area Council Climate Change Adaptation Strategy (AC CCCADS). This Area Council wide Strategy will be developed through an integrated "bottom-up" process and will be based on the priorities developed through the CCCAD Strategies and individual plans

<sup>19</sup> The vulnerability assessments will be informed by the baseline profiles completed during the PPG phase of V-Cap.

for the various sectors and outlined in 1.2.1 and 1.2.2 below. It will also be necessary to train addition people to build redundancy in the event that the Area Secretaries change.

160. The development of the AC CCCADS will inform the allocation of funds provided to the Area Council through the Province allocated under the Amendment to the Decentralisation Act 2013. It will provide clear plans for the use of the funds and will also inform other development partners of funding priorities in targeted communities.

161. The specific activities to achieve this output are highlighted in the table below:

Output 1.1. Integrated CC-Adaptation Plans mainstreamed in the coastal zone	
Outline activities:	
1.1..11	Establishment of field capability – co-located with Area Council Offices in the six-targeted provinces including “climate-proofed” field office facilities, transport and communication including a full-time Field Officer in each site to support Area Secretaries;
1.1.1.2	Undertake pilot in CC vulnerability assessment and climate change adaptation planning processes in selected communities and replication of these models to other sites to ensure government officials, traditional leaders, community members are able to fully engage in the process at each site;
1.1.1.3	Completion of comprehensive vulnerability assessments for each targeted community identifying key risk, vulnerabilities and proposed actions to build resilience to climate change forward;
1.1.1.4	Development of Coastal Climate Change Adaptation Development Strategies (CCCAD Strategies) in each community in each of the target sites and at the Area Council– all six provinces linking to specific plans for DRR, and under 1.2.1 and 1.2.2 incorporating upland management (including water resource management, forestry and agriculture), and coastal and marine management;
1.1.1.5	Implementation of the mainstreamed CCCAD Strategies at community and Area Council levels supported by appropriate funding, monitoring and evaluation and compilation of lesson learnt

## **Outcome 1.2 Improved climate resilience of coastal areas through integrated approaches**

162. The development of a fully integrated approach to enhancing resilience of communities and the land, coastal and marine resources, and related infrastructure will be highlighted as elements of the overall Coastal Climate Change Adaptation Development Strategies. However, V-CAP will provide support to mobile this broader strategy into a series of “Plans” to ensure the development of resilience in three main areas. This will be achieved through the development and implementation of activities to address three specific sets of outputs. Each output, the baseline without and with LDCF Intervention and the activities to support the output are outlined below.

### **Output 1.2.1 Threatened coastal ecosystems and resources such as mangroves, coral reefs, and fisheries rehabilitated to support livelihoods and food production and increase climate resilience.**

#### ***Without LDCF/SCCF Intervention (baseline):***

163. The coastal waters and associated resources of Vanuatu are a very important resource for the country; they are critical to the economy, to food security and livelihoods for much of the nation particularly in rural areas. Approximately 70% of the population of Vanuatu is located within the coastal zone. In addition, these areas contain a wealth of important biodiversity. Yet, these resources are being rapidly degraded by a variety of different causes.

#### ***Physical damage to coastal and marine ecosystems***

164. Crown of Thorns seastars (COTs) prey on coral and coral reefs and were identified as a major issue in five of the six target communities. COTs are having a severe impact on coral reef health and are suggested to have become more prolific with time due to an unbalance in the marine food chain due to an increase in the harvesting of predators, such as tritons. In addition, changes in water quality and high nutrient levels due to runoff from land may also enhance breeding success. There are limited examples of COTs removal efforts by communities. Without intervention, numbers of COTs are likely to continue to increase and continue to degrade coral reefs, further reducing both reef productivity and resilience to climate change.

165. Village consultations and field observations highlighted the issues associated with the increase in sediment loads. The associated issues with high sediment loads are sediment deposits on coral reefs, seagrass and mangroves, and an increase in turbidity of coastal waters. These sediment loads are due to unsustainable land management such as grazing livestock on steep slopes, slash and burn farming and logging. While this is currently an issue for much of coastal Vanuatu, it will likely be made worse by climate change due to an increased intensity of the rainy seasons.

#### ***Overharvesting of marine and coastal resources***

166. All communities consulted during the PPG phase reported a reduction in coastal and marine fish catch and fish size due to overfishing. According to the Department of Fisheries, approximately 75% of Vanuatu's coastal population is engaged in fishing, so given the increasing population more people are fishing in coastal waters than ever before. The depletion of fish populations and size is particularly threatening given the potential impacts of climate change.

167. Mangroves play a critical role as fish nurseries and for coastline protection. Mangroves are being cut in some locations (e.g. Southeast Malekula) for fuel and to provide boat access to the coast. This is reducing the ability of mangroves to protect the coast and erosion of the coast is resulting in some locations.

168. There are no mangrove management plans in place in the target sites (although in Crab Bay, East Malekula, IUCN is working with the government to support models of sustainable mangrove management). The laws regarding mangrove management are in need of review which is currently being considered by the DoE. In Aniwa, an invasive marine crab has been identified which is impacting the mangrove roots in the lagoon.

169. Most beaches observed in project areas are being mined for sand for use in local and regional construction projects. Removal of the fine sand lowers the beaches and reduces its' ability to protect coastal villages and infrastructure. In many cases this has led to enhanced beach erosion. The impact of sand mining will be made much worse by climate change, in particular coastal floods, storm surges and king tide inundation.

#### ***Lack of integrated planning for fisheries and coastal management***

170. The Draft National Integrated Coastal Zone Management Framework (NICZF) was developed in 2010 to guide management of coastal and marine areas. The vision of the NICZF is to provide a sustainable approach to coastal management through establishing institutional arrangements and involving relevant stakeholders in implementation of management activities. The responsibilities for overseeing the implementation of the NICZF are shared between the Departments of Environment, Fisheries, Forestry, Agriculture, Lands, Geology, Mines and Rural Water Supply with the Department of the Environment taking the lead role in implementation. However the NICZF remain as a draft and without additional focus is unlikely to be finalized.

171. The NICZF will be crucial in addressing climate change in the coastal zone. The NICZF acknowledges the Decentralisation Act, stating Provinces will provide local level government system support and become an integral part of the implementation process. However, at community, area council and provincial levels the PPG team was not made aware that this framework is being used as part of any planning process. Given the limited resources and capacity building needs requirements for effective implementation, it is unlikely that the NICZF will be comprehensively tested or piloted in the near future.

172. In Vanuatu, coastal and marine resources are generally owned according to chiefly land tenure systems and management based on traditional approaches. However, the increasing population and transition to a cash economy is placing increasing pressure on marine and coastal resources. The significant lack of government fisheries extension officers (only a few of the islands visited had fisheries officers, and there was very limited support to the Area Councils and local communities) and other extension workers engaged at community level is impeding the potential for more forward-looking and comprehensive coastal fisheries management.

173. Almost all villages and communities consulted during the PPG phase identified "tabu" areas (traditional fisheries management areas which are opened and closed at various times) that encompass coral reefs, mangroves, seagrass beds and open water. Typically, *tabu* areas are small in size and periodically opened for fishing activities (known as "kustom fishing"). The management regimes of these areas varied from location to location based on the views and directives of the local chief. Although it is recognized that closing an area for a period of time may enhance the catch from the area when it is opened for harvesting, the long-term fisheries and biodiversity conservation benefits of this approach are unclear. Establishing management objectives and fishing gear restrictions, combined with "no-take" zones will most likely be more beneficial in building resilience in the long term. The *tabu* areas could make a much more valuable contribution to fisheries resource management and provide greater conservation value if communities managing these areas received additional assistance in planning, training, enforcement and monitoring and evaluation.



174. The best example of marine resource management noted by the PPG team was in Okai, Southeast Malekula. Okai is part of an informal conservation network with four sites identified and recognized as Community Conservation Areas (also referred to as Marine Protected Areas) and linked to the network of Locally Managed Marine Areas (LMMA) in the Pacific. CCAs benefit from current management techniques including longer periods of closure and government assistance in monitoring and evaluation, e.g. Reefcheck. These practices aid in biodiversity conservation and fish population size. This informal network of CCAs hopes to further develop — similar to the networks established at Pele Island, North Tanna and Crab Bay in Malekula. V-CAP will further develop and support this network and similar other systems in project sites.

175. The PPG mission noted the on-the-ground presence of the Vanuatu Turtle Monitoring Network supported by the Department of Fisheries and an NGO called *Wan Smol Bag* in many of the target sites. This important network is enhancing community understanding of turtle conservation, and although some communities stated that they continued to eat turtles and their eggs, this practice appeared to be declining. Turtle Monitors are involved in the permission to harvest process and in some cases have the authority to ticket individuals for harvesting turtles. However, their work is severely hampered by resources and their ability to service networks.

176. Some communities raised concerns over the increasing number of dugongs, particularly in Southeast Malekula, with some people suggesting the need to cull dugongs were necessary. It is vital that a management regime be established to protect and manage this flagship species which also serve as an important indicator of eco-system resilience to climate change.

#### ***With LDCF/SCCF Intervention (adaptation alternative)***

177. The LDCF intervention will focus on the establishment of Community Integrated Coastal Zone Management Plans (CICZM Plans) at village and Area Council levels to enhance resilience of coastal eco-systems to climate change. The Plan will focus on building resilience to climate change through a number of measures. These include eco-system based management of fisheries resources through; enhancement management of sacred sites and traditional tabu areas; establishment of additional tabu areas, CCAs and conservation networks, and through additional fisheries management tools including gear restrictions.

178. A comprehensive baseline survey will inform the development of the CICZM Plans, which will focus on establishing baselines for marine ecosystem health, identifying breeding and recruitment areas and opportunities which will contribute to longer-term zoning for effective management of the sites. This baseline survey will be undertaken again in year five of the project to identify the impacts of the project on the quality of the marine and coastal ecosystems. Note: baseline surveys (year 1 and year 5) are not quick-and-dirty assessments and will require significant effort (e.g., stock assessment, mapping). Baseline surveys must be adapted (site-specifics) as all target sites will not share the same issues/priorities. This will guide site-level implementation and will also be reported back to the project team based in Port Vila. These baselines will be vital in establishment of a national approach to measuring the impact of climate change in Vanuatu.

179. Trainings will be provided to communities to introduce a simplified methodology for the monitoring eco-system health. This will be based on existing Reefcheck approaches currently in use in Vanuatu. The CICZM Plans will outline a long-term community-based monitoring plan, and evaluation of the data will be undertaken by the DOF together with local communities.

180. A specific intervention will be the removal of COTs recognized as one of the major threats and obstacles in building marine eco-system resilience. This will be achieved through a program to actively involve communities, particularly the youth, in the removal of COTs through establishment of sustainable long-term incentives.

181. The CICZM Plans will also outline a comprehensive education and outreach program for fishers (men, women and youth) on marine and coastal zone management. This outreach plan will link with and build upon the on-going work of the Turtle Monitoring Network.

182. A Climate Change Field Officer Coordinator will be appointed in each site to oversee implementation and coordination of coastal and marine V-CAP interventions. Their role will include development and facilitation of community outreach, support in development of CICZM Plans and deployment of training to engage the community. The new Coordinator will link into the Wan Smol Bag to monitoring network. The coordinator will also partake in the identification of priority communities to create LMMA and tabu plans.

183. The implementing partners for activities related to Output 1.2.1, will be the Department of Fisheries with additional support from Wan Smol Bag. Wan Smol Bag is a civil society based in Vanuatu that has created an extensive network of turtle and wildlife monitors.

184. V-CAP will also facilitate the establishment of links with the *Locally Managed Marine Area Network*, a network on communities practicing management of traditional “tabu” areas throughout the Pacific. This network has substantial experience in the development of community engagement in coastal zone

management and the establishment of local fishery regimes. Interactions with this network will enhance capacity building and sharing between community approach in Vanuatu and other Pacific Island Countries. Additionally, V-CAP will maintain and support the linkages created with IRD – a French Government research agency that is providing vital support to the Department of Fisheries in the development of science to support the on-going efforts for fisheries management.

185. Enhancing eco-system resilience to climate change in the coastal areas will have additional benefits including an increase in the coverage of marine conservation areas in Vanuatu. The benefits associated with this include increases biodiversity, eco-system resilience and increased fish populations through active breeding grounds, nurseries, and feeding areas. As marine conservation areas grow, the fish population in protected areas will spill over into the non-protected areas, thus improving the abundance of fish available for harvest.

Province/ Site	Proposed of CC-Adaptation Measures
<b>South Malekula Malampa Province -</b>	<ul style="list-style-type: none"> <li>• Development of Community Integrated Coastal Zone Management Plans</li> <li>• Establishment of MPAs / CCAs</li> <li>• Crown-of-Thorn Seastar removal</li> <li>• Mangrove management plans</li> <li>• Species management plans for Dugongs</li> <li>• Installation of FADs</li> <li>• Upland management measures implemented to reduce sediment run-off into marine systems (link to 1.2.2.)</li> </ul>
<b>Central Pentecost Penama Province</b>	<ul style="list-style-type: none"> <li>• Development of Community Integrated Coastal Zone Management Plans</li> <li>• Establishment of MPAs / CCAs</li> <li>• Crown-of-Thorn Seastar removal</li> <li>• Installation of FADs</li> <li>• Upland management measures implemented to reduce sediment run-off into marine systems</li> </ul>
<b>South Santo Sanma Province /</b>	<ul style="list-style-type: none"> <li>• Development of Community Integrated Coastal Zone Management Plans</li> <li>• Establishment of MPAs / CCAs</li> <li>• Management of upland water quality issues (link to 1.2.2.)</li> <li>• Upland management measures implemented to reduce sediment run-off into marine systems</li> </ul>
<b>North-west Epi Island Shefa Province /</b>	<ul style="list-style-type: none"> <li>• Development of Community Integrated Coastal Zone Management Plans</li> <li>• Establishment of MPAs / CCAs</li> <li>• Crown-of-Thorn Seastar removal</li> <li>• Installation of FADs</li> <li>• Upland management measures implemented to reduce sediment run-off into marine systems (link to 1.2.2.)</li> </ul>
<b>Tafea Outer islands - Tafea Province</b>	<ul style="list-style-type: none"> <li>• Development of Community Integrated Coastal Zone Management Plans</li> <li>• Establishment of MPAs / CCAs</li> <li>• Crown-of-Thorn Seastar removal</li> <li>• Installation of FADs</li> <li>• Upland management measures implemented to reduce sediment run-off into marine systems</li> </ul>
<b>Torres Group Torba Province -</b>	<ul style="list-style-type: none"> <li>• Development of Community Integrated Coastal Zone Management Plans</li> <li>• Establishment of MPAs / CCAs</li> <li>• Species management plans for key species, including coconut crabs</li> </ul>

	<ul style="list-style-type: none"> <li>• Installation of FADs</li> </ul>
--	--

186. V-CAP will also develop synergies, or networks, with the existing marine resource management projects within Vanuatu. These projects currently operate under the Ministry of Fisheries and Wan Smol Bag. Lessons learned from the management of these areas will be applicable to other LMMAs in Vanuatu. Furthermore, the lessons learned from creating a chain of linked LMMAs and Tabu Areas within a single area will serve as guide for future projects in Vanuatu in their efforts to enhance resilience to climate change.

Output 1.2.1 Threatened coastal ecosystems and resources such as mangroves, coral reefs, and fisheries rehabilitated to support livelihoods and food production and increase climate resilience

Outline Activities:

1.2.1.1	Build upon initial PPG assessments to develop detailed marine ecosystem health baselines, with quantitate and qualitative data on fisheries including coral and mangrove health at all six target sites and identify key issues in management of these sites. (note baseline will be re-surveyed in final year
1.2.1.2	Develop Community Integrated Coastal Zone Management Plans (CICZM Plans) through a participatory approach integrating fisheries, traditional management regimes at the village/ community and areas council levels identifying time-bound actions for long-term management to include tabu and Community Conservation Areas.
1.2.1.3	Implementation of the CICZM Plans including deployment of FADs, monitoring on a regular basis, COT monitoring surveys and removal, management of fishing activities and other associated measures.
1.2.1.4	Support the site-based network of marine managed areas throughout Vanuatu which include V-CAP sites and existing CCAs to facilitate learning between resource monitors, communities and government. Training for men, women and youth will be delivered through this network.
1.2.1.5	Monitoring and evaluation of the implementation of these plans will be completed annually by Field Officer from V-CAP sites and submitted annually to the Coordinator for this Component and the Project Implementation Unit.

**Output 1.2.2 Coastal areas stabilized through re-vegetation and other ‘soft’ approaches to complement ‘hard’ measures**

187. In the context of small island systems, the V-CAP PPG considered the definition of “coastal areas” as all land within a catchment that drains into targeted coastal waters. In the majority of targeted sites, the landowners and communities responsible for coastal management are the same owners (or closely related) for adjacent upland areas. Additionally, the drainage areas in the uplands areas have a direct interaction with the V-CAP target coastal areas. Thus, an integrated “Ridge to Reef” approach is the most suitable approach for the delivery of V-CAP. Currently none of the project sites visited during the PPG have terrestrial upland or coastal land-use management plans.

188. Without V-CAP intervention there will continue to be a substantial disconnect between the management of the land and the sea, and any opportunities for development of a comprehensive approach will be not be implemented in the foreseeable future. The challenges of climate change will impact on both systems and the interaction between these systems needs to be addressed in the context of climate change.

***Without LDCF/SCCF Intervention (baseline):***

189. One of the greatest challenges in upland management is the management of topsoil and sediment being washed from the upland and coastal area into the nearshore and marine systems. These are a range of activities that impact on these systems. These are outlined below:

**Forestry and deforestation**

190. Deforestation is occurring in most of the targeted communities and is one of the most serious environmental challenges in each of the V-CAP sites and also in wider island management in Vanuatu.

There are a variety of reasons for the deforestation including the need to harvest timber to meet building supply which often targets old growth forest, the creation of additional areas for agriculture and growing populations requiring larger land areas. There is also logging in some locations for exporting to Port Vila and beyond. Significantly, deforestation has resulted in a loss soil stability, increased runoff and has impacted on groundwater recharge. There is an urgent need to provide alternatives to the exploitation of old-growth forest, including forestry lots, seedlings and enhancement of agricultural practices.

#### *Agriculture and environment*

191. Agriculture is the largest source of income in Vanuatu. The vast majority of the population is located in rural areas where the majority of households depend on agriculture for income and food security. Farming practices generating the most sediment include slash and burn farming, livestock grazing on steep slopes, and deforestation. In addition to increasing sediment run-off to coastal waters these processes also degrade the soil and create a loss of top soil.

192. In most target sites, shifting cultivation agricultural practices are resulting in high levels of sediment run-off, in particular from traditional shifting garden cultivation. These farming practices involve clearing vegetation through cutting and fire. Additionally, shifting cultivation and accelerating crop rotation has created additional sediment generation issues. There are practices that can reduce the sediment load such as farming on land with low gradient; planting erosion reduction species (e.g. vetiver grasses), and leaving a buffer between water courses and agricultural lands (e.g. riparian vegetation) that are currently not being promoted by agriculture officials or being implemented by communities.

193. In Vanuatu, livestock are a valuable source of income for rural communities and for larger scale commercial operations. Often cattle are associated with copra plantations which cover large tracks of Vanuatu. As the price of copra decreases more livestock are roaming the forest in an uncontrolled manner. On steep slopes the livestock cause hill-slope erosion, coastal erosion and increase landslide potential.

194. Pigs, both domesticated and wild, are very popular in Vanuatu, and present a number of challenges. Pigs were observed to disturb topsoil creating erosion in a number of the targeted sites. In addition, in some villages pigs were farmed upstream/upslope of villages. In some villages the waste from these pigs is transported through with storm rain resulting in unsanitary conditions for village residents. In addition, uncontrolled goats are causing severe erosion problems in some areas (e.g. Aniwa Island) which is leading to increased coastal erosion and a loss of large amounts of top soil.

#### *Agriculture and horticulture – seasonality and crop diseases*

195. Communities in all target sites reported a range of challenges in relation to agriculture, particularly with regard to pests and diseases on crops. On average, communities reported that 10-30% of crops are being lost as a result of pests and diseases, but in some cases they reported up to a 70% spoilage factor. Communities also reported they are receiving no extension services from the Department of Agriculture or related agencies in addressing this issue. The reasons for the extent of this problem are unclear but may be related to introduced crops and diseases (e.g. lap-lap leaf disease) or changes in agricultural practices (e.g. higher cropping densities, or climate related (e.g. wet weather fosters rot which makes plants weaker and more vulnerable). As a result of these agricultural issues communities reported times of food shortages. The increasing population has created the need for increased garden size which has resulted in clearing additional forest. This has severe implications for sustainable land management and a number of communities, particularly women, identified this issue as their highest priority.

196. Local communities variously reported their perceptions of changing weather patterns on crop harvests. Many of the coastal communities interviewed voiced concerns over crop damage due to seasonal shifts associated, possibly associated with El Nino patterns. There was also a high concern over crops being unable to withstand the environmental changes, i.e. increased temperature, changing rainfall, droughts, etc., associated with climate change.

#### *Water, supply, quality and quantity*

197. Provision of secure and adequate water supply was one of the highest priorities reported to the PPG team by almost all communities. Water resources in targeted sites include rainwater harvesting, groundwater, and surface water sources piped to central points in villages. Most communities identified water scarcity at some times of the year, particularly towards the end of the dry season, lack of supply following extreme events (e.g. cyclones and storms) and salinization of groundwater. It is highly likely that all of these issues will be exacerbated by climate change. There are limited government resources to address these water issues, and islands such as Aniwa have declared water “emergencies” in recent years. On Akam Island, stakeholders reported that children do not attend school on Wednesday’s during the dry season as they spend that day, with their teachers collecting water for home use.

198. The Water Resources Division is currently under pressure to increase provision of water supply to rural communities however, it is not adequately staffed and currently has substantial burden on its scarce

resources due to the scale of national need and the additional demands of donor projects. As a result, many communities in the targeted areas are in urgent need of additional technical and financial support.

199. Livestock often have open access to streams and rivers, and their waste introduces high amounts of nitrogen into the surface water systems with resulting algal growth and decline in the water quality of surface water systems. Also, dense livestock grazing next to streams and rivers introduces high levels of nitrogen to the water systems. The nitrogen loads can create eutrophic conditions both in the streams and coastal waters, killing fish, harming the eco-system, and creating major human health issues.

#### *Land-use planning*

200. Land-use planning in V-CAP sites is typically undertaken by customary owners through traditional management regimes. However, due to overpopulation and linked to challenges associated with sea-level rise, some communities reported to the PPG team that they were considering relocating (e.g. one coastal village in Epi Island and a number of communities in South Malekula). This has obvious implications for management and utilization of terrestrial resources and the lack of land-use planning and provision of associated government services will exacerbate this future issue.

201. At this point there are no terrestrial conservation areas in the V-CAP sites – although a number of upland areas are managed in customary practices.

202. In relation to coastal vegetation, its removal for infrastructure, i.e. houses and roads, as impacted upon its ability to hold coastal sands intact and prevent erosion. This is compounded by the removal of sand from beaches. Without planned interventions to address this issue, erosion will continue to be a problem and will become much worse under the climate change scenarios.

#### ***With LDCF/SCCF Intervention (adaptation alternative)***

203. The LDCF intervention will focus on the establishment of an Upland Management CCA Plan (UMCCAP) at village and Area Council levels to enhance resilience of landward elements of coastal ecosystems to climate change. The Plan will address aspects of coastal and watershed management.

204. A comprehensive baseline survey will inform the development of the UMCCAP, which will focus on establishing baselines in relation to locations of erosion, water sources, riparian vegetation, water sources and their management, resource management, and conservation areas (both traditional and formally recognized). This baseline survey will be undertaken again in year five of the project to identify the impacts of the project on the quality of the coast lines, sediment production, water services, and erosion in relation to their contribution to enhancing resilience to climate change.

205. The UMCCAPs will outline a comprehensive extension and outreach program for farmers (including men, women and youth) on land management and climate resilient agricultural practices. Additionally, climate resistance crops and erosion control plants (e.g. vetiver grass and bamboo) will be disseminated to all communities. The planning of erosion control species will form part of the “softer measures” for addressing maintenance of infrastructure. The UMCCAPs will also articulate specific plans for managing water resources and creating terrestrial conservation areas in sites where this is required.

206. Trainings will be provided to communities to improve knowledge regarding sustainable land management and erosion reduction, as well as WASH. Where necessary, specific interventions will also be undertaken to address issues of unsanitary conditions due to livestock.

207. Field Coordinators will be appointed in selected target sites to oversee implementation and coordination of land management V-CAP interventions. Their role will involve development and facilitation of community outreach initiatives; support to communities in developing UMCCAP, and organization of training sessions. Extension services will also be provided by the extension staff of the Department of Agriculture, Farm Support Association and agricultural research center in Santo. Topics for training and extension will include climate change, erosion control species and climate resistant crops. Further, Field Coordinators will assist in creating terrestrial conservation plans and overseeing water resource projects.

208. The proposed activities are outlined in the table below. For a more detailed discussion of the proposed adaptation activities at each site please see Annex 7.

<

Province/ Site	Proposed of CC-Adaptation Measures
North-west Epi Island Shefa Province	<ul style="list-style-type: none"> <li>• Development of Upland Management CCA Plan</li> <li>• Extension in climate change resilient crops and agricultural practices</li> </ul>

	<ul style="list-style-type: none"> <li>• Identification of erosion hotspots and “soft” erosion control measures in upland areas and</li> <li>• Upland management enhanced to minimize sediment flow into waterways and coastal environments</li> <li>• Enhancing water supply quality and security – in particular linked to DRM plans</li> <li>• Tree planting to ensure coastal protection and reduction in erosion from sea-level rise</li> </ul>
<b>South Santo Sanma Province /</b>	<ul style="list-style-type: none"> <li>• Development of Upland Management CCA Plan</li> <li>• Extension in climate change resilient crops and agricultural practices</li> <li>• Support efforts for protection of riparian vegetation from cattle grazing</li> <li>• Identification of erosion hotspots and “soft” erosion control measures in upland areas and</li> <li>• Upland management measures enhanced to minimize nutrient flow into waterways and coastal environments</li> <li>• Enhancing water supply and security – in particular linked to DRM plans</li> <li>• Tree planting to ensure coastal protection and reduction in erosion from sea-level rise</li> </ul>
<b>Central Pentecost Penama Province</b>	<ul style="list-style-type: none"> <li>• Development of Upland Management CCA Plan</li> <li>• Extension in climate change resilient crops and agricultural practices</li> <li>• Identification of erosion hotspots and “soft” erosion control measures in upland areas and</li> <li>• Upland management enhanced to minimize sediment flow into waterways and coastal environments</li> <li>• Enhancing water supply – in particular linked to DRM plans</li> <li>• Tree planting to ensure coastal protection and reduction in erosion from sea-level rise</li> </ul>
<b>Tafea Outer islands - Tafea Province</b>	<ul style="list-style-type: none"> <li>• Development of Upland Management CCA Plan</li> <li>• Extension in climate change resilient crops and agricultural practices</li> <li>• Identification of erosion hotspots and “soft” erosion control measures in upland areas and</li> <li>• Upland management enhanced to minimize sediment flow into waterways and coastal environments</li> <li>• Enhancing water supply – in particular linked to DRM plans</li> <li>• Identification of terrestrial CCAs</li> <li>• Tree planting to ensure coastal protection and reduction in erosion from sea-level rise</li> </ul>
<b>South Malekula Malampa Province -</b>	<ul style="list-style-type: none"> <li>• Development of Upland Management CCA Plan</li> <li>• Extension in climate change resilient crops and agricultural practices</li> <li>• Identification of erosion hotspots and “soft” erosion control measures in upland areas and</li> <li>• Upland management enhanced to minimize sediment flow into waterways and coastal environments</li> <li>• Enhancing water supply – in particular linked to DRM plans</li> <li>• Identification of terrestrial CCAs</li> <li>• Intensive tree planting to ensure coastal protection and reduction in erosion from sea-level rise</li> </ul>
<b>Torres Group Torba Province -</b>	<ul style="list-style-type: none"> <li>• Development of Upland Management CCA Plan</li> <li>• Extension in climate change resilient crops and agricultural practices</li> <li>• Tree planting to ensure coastal protection and reduction in erosion from sea-level rise</li> <li>• Identification of erosion hotspots and “soft” erosion control measures in upland areas and</li> <li>• Upland management enhanced to minimize sediment flow into waterways and coastal environments</li> <li>• Enhancing water supply and WASH – in particular linked to DRM plans</li> </ul>

209. Enhancing the management of land and surface water will also aid in community farming and coastal fishing. Decreasing sediment generation and erosion, securing crops and water management, and conserving terrestrial resources will create more climate change resilient coastal communities. Lessons learned from the management of these areas activities/areas will be highly relevant to other communities in Vanuatu and can serve as a guide for replication in future projects.

210. The activities are outlined below.

Output 1.2.2 Coastal areas stabilized through re-vegetation and other 'soft' approaches to complement 'hard' measures	
Indicative activities:	
1.2.2.1	Develop baselines of issues and threats of terrestrial upland and coastal ecosystems with a particular focus on impacts of climate change on agriculture, water supply, forestry and protected area management and related resources at all six V-CAP sites;
1.2.2.2	Develop Integrated Upland Management and Climate Change Adaptation Plan (UMCCAP) through a participatory approach integrating forestry, agriculture, and water resource and traditional management regimes at the village, community and areas council level identifying time-bound actions for long-term management to include tabu and Community Conservation Areas.
1.2.2.3	Implementation of the Upland Management and Climate Change Adaptation Plan (UMCCAP) including nurseries, agricultural training and extension, provision of climate-resilient crops, soft measures, etc, though development of time bound annual work plans ;
1.2.2.4	As part of the implementation of Upland Management and Climate Change Adaptation Plan (UMCCAP) develop specific cooperative programs with forestry, agriculture and water resources agencies to deliver an agreed series of comprehensive work plans with time bound outputs to be delivered in conjunction with Field Officers, Area Council and appropriate provincial officials and extension staff from key national agencies;
1.2.2.5	Monitoring, evaluation and work planning will be based on the UMCCAP prepared in Year one, and annual participatory reviews will identify progress and lessons learnt to be incorporated into the workplan of the following year.

### **Output 1.2.3 Improved resilience through climate proofing of selected public conveyance infrastructure in the coastal zone in at least 6 priority vulnerable coastal communities**

#### ***Without LDCF/SCCF Intervention (baseline):***

211. The “public conveyance infrastructure” as used in the terms of V-CAP refers not only to roads and vehicular transport, but also refers to pedestrian walking paths that connect to the main roads and also to pedestrian river crossings that occur on the main roads. Public conveyance infrastructure are the infrastructure that provide linkages between communities and services and markets, e.g. health centers, schools and markets.

212. The PPG mission learnt of a number of deaths and challenges for communities due to weaknesses and inadequacy in the public conveyance infrastructure. This ranges from women having to travel on treacherous seas for up to 3 hours during problems in child birth; through to the dangers on many of the community constructed paths and walkways with bridges and river crossings; through to the river crossing on the main roads where there are reports of children being washed away.

213. Climate change will present a number of challenges to this public conveyance infrastructure. Unsealed walking paths and trails are a source of erosion which will become worse under droughts, additional rains and changes in seasonality. There may be increased landslides. Water flows in river crossings will become more unpredictable.

214. The Public Works Department (PWD) of the Ministry of Infrastructure and Public Utilities (MIPW) is responsible for the construction, management and maintenance of road and public conveyance infrastructure in Vanuatu. With villages spread out over 80 islands, the PWD faces enormous challenges in meeting the needs of communities throughout Vanuatu, especially given its' limited human and financial resources.

215. The PWD has plants, equipment and staff stationed in each provincial capital. For ease of access their works tend to focus on these main islands with smaller outer islands being served on an as-needed

basis. For example the last time PWD carried out works on Epi Island was in 1998 when large equipment was transported by barge to the island and removed once this work was completed.

216. The maintenance of conveyance infrastructure continues to be a major challenge on islands without a permanent PWD presence. The PWD is currently working with the “Vanuatu Transport Sector Support Program” VTSSP (see below) to develop Island-based contractors (IBCs) from island-based businesses to assist with road maintenance in outer islands. However, this process is currently in the initial stages of development will apply to only a few of the V-CAP target sites.

217. In a number of the V-CAP sites, e.g. Epi Island and South Melekula, the degradation of road surfaces and bridges is not primarily due to vehicle usage but rather, is weather related. This weather related degradation of roads includes erosion from rain and storm events, small landslides, and drainage issues. Therefore, “soft maintenance” solutions such as erosion control, improved drainage and quick repair following storms etc will ensure much greater longevity of transport infrastructure.

218. The Australian funded VTSSP is highly relevant to V-CAP implementation. The VTSSP assists the Government in responding to public pressure for rapid and tangible improvements in transport infrastructure, while also putting in place a longer-term program to ensure that transport infrastructure assets are maintained into the future. The aim of VTSSP is to improve the management of the transport sector; the quality of public expenditure management; the private sector’s role in delivery of some of these programs and to identify ways to support the transport system improvement in using labor force technologies.

219. There is also a proposed Chinese funded road program to be undertaken in some islands. However, the full details of the proposed interventions were not available during the PPG mission and will need to be accessed during the Inception Phase of the project so avoid duplication of efforts and ensure complementarity between the initiatives.

220. A high priority concern of several communities consulted relates to dangerous river crossings. Communities reported significant health and safety issues after periods of sudden, heavy or prolonged periods of rain. Although rehabilitated river crossings are suitable for vehicles, communities reported that numerous children have died or been injured en route to/from schools while attempting to cross rivers and streams that fill quickly with water (within hours) and become impassable. The same has occurred when people have tried to access gardens and health centers during the wet season. Government health and education personnel confirmed these reports and also noted that children frequently miss a significant amount of school when river levels are high and dangerous. Given climate change projections for increased precipitation, heavy rainfall and severe storms, it is expected that river crossing will become increasingly dangerous leading to further injuries, loss of life and restricted access to public services.

#### With LDCF/SCCF Intervention (adaptation alternative)

221. The activities in this component make use of both soft and hard interventions and are designed to increase resilience (i.e. reducing vulnerability) of public conveyance infrastructure to the impacts of climate change through strengthening natural, built, social, and governance systems. All of these elements are essential in the long-term maintenance of public conveyance infrastructure.

222. Hard engineering options on roads and walking paths will be used to correct drainage systems, stabilize hard infrastructure against erosion and collapsing of side-banks, bridge rehabilitation (including river protection to stop erosion and undermining), and pedestrian river crossings, foot bridges and major pathways. These hard engineering options will rehabilitate and strengthen existing infrastructure systems that were in the past constructed by communities, government or a partnership between both.

223. Softer engineering options were identified together with local communities and included slope stabilization of roads and walkways through planting with vetivar grass and bamboo, and the stabilization of the coast through the planting of mangroves, coastal vegetation and related species. Communities in all sites expressed their commitment to undertaking these activities through specific activities identified under 1.2.2 as outlined above.

224. V-CAP interventions will modify vulnerability in these areas by minimizing exposure to water related damage and will enable communities to continue to use conveyance infrastructure for increased periods of time (whether road or pedestrian crossings) even in times of extraordinary rain and flooding (within safety considerations). Communities during the PPG consultations indicated their willingness to assist in monitoring the maintenance needs for the infrastructure and identification of suitable arrangements for the communities to play a role in the maintenance.

225. V-CAP will also build upon and support VTSSP implementation through a range of integrated activities including erosion control and supporting climate proofing of investments by providing incremental funding for construction that integrates future climate change projections (e.g. providing larger drains for extreme rainfall events, and ensuring river banks are stabilized).



226. Through discussion with PWD and VTSSP managers, it was also agreed that walkways and river crossings are essential to the health and socio-economic well-being of coastal communities. Given resource restrictions, PWD is unable to assume responsibility for secondary roads, pedestrian river crossings and footpaths but indicated their support for V-CAP to fund this infrastructure where warranted. However, it was stressed that these crossings should be managed at the local level with communities and Area Councils assuming responsibility for construction and maintenance of any new infrastructure. This self-help strategy is in line with the V-CAP approach to sustainable solutions and provides an excellent opportunity to engage youth enrolled in Rural Training Centre (RTCs) construction courses and to develop linkages in Area Council Strategic Plans.

227. While the concepts outlined in this section are based on PPG discussions with local communities, provincial authorities and PWD and represent clear alternatives to the current baseline situation, further consultation will be required with target communities during the Inception Phase of the project. In particular, locally appropriate decisions will be required in relation to siting, design and long-term management. More detailed discussions with communities will also serve to build local ownership and ensure community members are willing to accept management and maintenance responsibilities.

228. As such, V-CAP will support, through PWD, a number of specific public conveyance interventions include footbridges, river bank stabilization, erosion control, rehabilitation of creek bed crossings and bridge development (Epi Island). A more complete description of the proposed activities, including detailed designs and are attached in site descriptions in Annex 7.

229. A summary of proposed interventions are indicated in the table below. Please see annex 7 for a more detailed description of the proposed activities.

Province/ Site	Proposed of public conveyance infrastructure CC-Adaptation Measures
<b>North-west Epi Island Shefa Province</b>	<ul style="list-style-type: none"> <li>• Rehabilitation of road stream, crossings</li> <li>• Road climate proofing and rehabilitation of concrete alignment in sensitive areas</li> <li>• Bridge climate proofing and rehabilitation</li> <li>• Soft erosion measures (1.2.2)</li> </ul>
<b>South Santo Sanma Province /</b>	<ul style="list-style-type: none"> <li>• 4 pedestrian stream crossing</li> <li>• Soft erosion measures (1.2.2)</li> <li>• Bank stabilization</li> </ul>
<b>Central Pentecost Penama Province</b>	<ul style="list-style-type: none"> <li>• Pedestrian stream crossings</li> <li>• Road climate proofing and rehabilitation</li> </ul>
<b>Tafea Outer islands - Tafea Province</b>	<ul style="list-style-type: none"> <li>• Climate proofing of water storage infrastructure</li> <li>• Climate proofing of walking paths, tracks, roads</li> </ul>
<b>South Malekula Malampa Province -</b>	<ul style="list-style-type: none"> <li>• Road climate proofing and rehabilitation</li> </ul>
<b>Torres Group Torba Province -</b>	<ul style="list-style-type: none"> <li>• Climate proofing of village infrastructure</li> </ul>

230. The site-based (see annexes for detailed description of activities in each site)

231. The specific activities to achieve this Output are outlined below.

Output 1.2.3 Improved resilience through climate proofing of selected public conveyance infrastructure (roads, bridges, etc. implemented by the Public Works Department) in the coastal zone in at least 6 priority vulnerable coastal communities	
Indicative activities:	
1.2.3.1	Undertake further in-depth community mapping, in particular transport routes and use of secondary conveyances, to access markets and health and education facilities particularly in Pentecost, Ambae, Santo and Epi project sites.
1.2.3.2	Develop an integrated and detailed workplan for the implementation of the works, including detailed costing of the various designs and the identifications of suitable methods of delivery of the proposed works

1.2.3.3	Develop and finalise an agreements between PWD, communities, provincial governments and V-CAP on implementation arrangements with a particular focus on responsibilities for long-term maintenance, management and repairs of roads, bridges and public walkways and associated infrastructures.
1.2.3.4	Develop and implement an overall monitoring and evaluation plans for the roll out of works in each of the site, incorporating training and capacity building activities for local communities and provincial authorities.
1.2.3.5	Training of students from the RTC in Ambae and communities from V-CAP sites in construction and maintenance of primary and secondary conveyance networks to provide long-term management and opportunities for scaling up approaches.

## 2.5.2 Component 2: Information and early warning systems on coastal hazards

### Outcome 2.1: Reduced exposure to flood-related risks and hazards in the target coastal communities.

Co-financing amounts for Outcome 2.1:

VMGD	\$ 840,000
JICA	\$ 3,000,000
UNTFHS Joint Project (UNDP-FAO-UNICEF)	\$ 100,000
PRRP – UNDP	\$ 300,000
<hr/>	
Indicative co-financing	\$ 4,240,000
LDCF project grant requested:	\$ 1,000,000

232. The draft *VMGD Early Warning System and Warning Dissemination Strategy (2013)*, supported by the PHRD/ World Bank *Mainstreaming Disaster Risk Reduction (MDRR)* Project, provides a clear roadmap to implementation of dual strategy approach for implementation of the Early Warning System for the next 5 years by VMGD. The two main strategies to be implemented are:

- i. *Early Warning System Strategy (Information from hazards source to hazards analysis)*  
Based on the monitoring of climate change and natural hazards, VMGD will improve their real-time data network. This emphasizes of this data network will be earthquakes, volcanoes, cyclones, quick flooding, tsunamis and climate-related hazards monitoring
- ii. *Warning Dissemination System Strategy (Information from hazards analysis to the general public)*  
Based on the dissemination of the information to the public, VMGD and NDMO need to improve their automatic alert and emergency system to the general public.

233. The development of this strategy has provided the opportunity for development partners to clearly identify, coordinate and integrate their support to the implementation of the strategy. Some of the clear commitments to the implementation of this strategy include:

- The World Bank MDRR Project will focus on the creation of a complete Tsunami Warning System for the two most important urban areas of Vanuatu, i.e. Suva and Santo. No monitoring system will be funded with this project. Support will be provided to the Vanuatu National Warning Centre, the VMGD for the warning strategy and a complete set of warning dissemination tools for urban areas only (sirens, evacuation maps and signage, media broadcast for urban areas);
- The LDCF-funded World Bank IRCCNH Project will focus on the reduction of volcanic hazards impacts in Torba and Tafea provinces. The VMGD Volcanic Hazards Monitoring System will be funded and Volcanoes Contingency Plans will be developed for these two provinces only. The warning dissemination systems will be made through the development of two Provincial Disaster Centres in Tafea and Torba Provincial capitals; and
- The JICA Project “*Strengthening of VMGD Hazards Monitoring Capacities*” focuses on increasing VMGD capacities regarding early warning systems for earthquakes and tsunamis through the installation of 3 seismic monitoring stations and 3 tides gauges. In addition, early warning systems for severe weather in the major population centres will be enhanced thorough with the installation of 2 automatic weather stations, one at each of the two main Airports (Port-Vila Bauerfield and Luganville Pekoia). No warning dissemination system will be funded with this project.

234. V-CAP will support and fund an important part of the VMGD Early Warning and Warning Dissemination Strategy through:

- i. The installation of 5 Automated Weather Stations (AWS) at each existing weather observation sites (when added to the 2 JICA's AWS - the National Vanuatu network will be complete)
- ii. The creation of a dedicated Warning Dissemination System to the most important and vulnerable areas of Vanuatu with the installation of an automatic broadcast system in every provincial office, every Observation sites and in the targeted communities of this project

#### **Baseline (without LDCF intervention):**

235. The overarching goal of this component is to ensure the Vanuatu economy can continue to grow in full cognizance of natural hazards risks. Appropriate and sufficient warning systems, supported by

appropriate planning, will enhance national resilience and ensure that relevant public and private sector agencies can respond in a timely manner to future emergencies thereby minimizing damage, loss of life and the cost of recovery. The current lack of an integrated automated system for monitoring of climate-related hazards such as coastal flooding, storm surges and sea-level rise, and the timely release of early warnings against coastal flooding and storm surges through various public media to the “last mile” were reviewed in detail during the PPG<sup>20</sup>

236. The development of a complete end-to-end climate-related hazards Early Warning System would place VMGD on a higher level regarding climate hazard resilience. Currently the old and unreliable system is mainly based on a voice communication system for monitoring; and the deployment of the warning dissemination system is patchy and does not reach communities outside radio and/or telephone coverage.

### **Weaknesses in Automated System for Monitoring Climate-related Hazards**

237. All activities related to forecasting climate-related hazards in Vanuatu are managed by the Weather Forecast and Observation Division (WFOD) of the VMGD. The WFOD primary function is to provide short and medium term weather forecasts to the aviation and marine sectors as well as to the public. The Division also provides warnings for severe weather events, in particular tropical cyclones and flash flooding. It is also responsible for tsunami advisories to the public in Vanuatu. This Division provides the following list of services to the public on an hourly, daily and weekly basis:

#### *Public Forecasts*

- Hourly images, uploaded on the Met. Website
- Mean Sea Level Pressure Charts, issued every 6 hours
- Public Forecast via local Radio and FM station outlets, issued every 4 hours
- Day Provincial Forecast via the website, updated 3 times a day
- 7 Day forecast for provincial centers updated 2 times a day
- Forecast Policy, updated 2 times a day
- Vanuatu Cities Forecast, issued once a day
- 7 Day forecast for Weekly IPV and Independent Newspaper and daily forecast for Daily Post Newspaper.

#### *Marine Forecasts*

- 4 Day Marine Forecast, including wave and swell height, issued 2 times a day. The marine forecast covers six boundaries: The Northern Waters, the Central Waters, the channel between Efate and Erromango, the Southern Waters, and Port Vila and Luganville Harbor.
- Strong Wind Warning when warranted.
- High Seas Forecast Covering Area from 12S to 23S and from 160E to 175E
- High Seas Warning during Tropical Cyclone events.

#### *Aviation Forecasts*

- Terminal Aerodrome Forecast (TAF) issued every 4 hours
- Area Forecast issued every 4 hours
- Route Forecast for Air Vanuatu
- Trend Type Forecast for the three international Aerodromes NVSS, NVVV and NVVW.

#### *Weather Warnings*

- Coastal Marine wind warning, issued every 6 hours.
- High Seas Wind Warning covering Area 12S to 23S, 160E to 175E
- Tropical Cyclone five Day outlook, issued 2 times a day
- Tropical Cyclone information, advisories and warnings
- Tropical Cyclone Forecast Track Map, indicating the past track and the 48 hour forecast track for current tropical cyclones affecting Vanuatu
- Tsunami information and advisories
- Severe weather warnings issued for rainfall of 100mm/day (or more) and inland winds of 40km/h (or more)
- Severe Weather outlook for the next 3 days. The severe weather outlook covers rainfall, inland winds and winds over the coastal waters of Vanuatu.

---

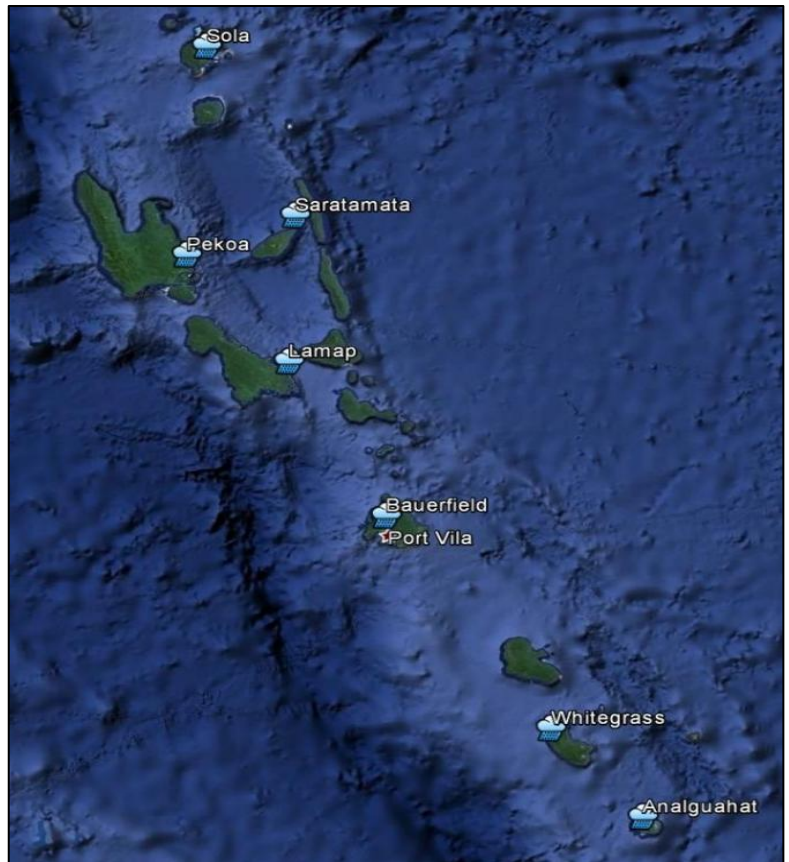
<sup>20</sup> (see Assessment and Evaluation Report of the Vanuatu Meteorology and Geohazards Department Early Warning System, 2013).

238. Unfortunately the number of reports issued, is perhaps not the best measure of the reality of the data accuracy and quality. All those bulletins and information, which reflect very good internal Standard Operating Procedures, are sometimes inaccurate because there are “gaps” in data collection or missing synoptic weather information. Although VMGD installed a Quality Management System (QMS) in June 2012, reliability and data consistency are sometimes poor due to the manual collection of information in the field, then relying on radio to transmit the data to Port Vila. Often there is “radio transmission system failure” (power failure, bad weather influencing poor radio transmission system, system failure) or unavailability of local observers (each VMGD observation site is managed by 2 VMGD Observers who are working 24/7) leading to significant gaps in data. This situation is often worse in periods of severe weather events – when this data is most needed! In line with the *VMGD Early Warning and Warning Dissemination Strategy*, the addition of an Automated Weather System Network will strengthen the VMGD capacity on the seasonal forecast on both short-term monitoring, through WFOD, and long-term monitoring through the Climate Division. Part of both the V-CAP initiative and JICA Project (“*Strengthening of VMGD Hazards Monitoring Capacities*”) this Automated Weather Monitoring Network will be the crucial element in implementing a successful and complete Early Warning System on climate-related hazards.

#### **Lack of Meteorological Automated System**

239. Currently meteorological information is managed through the WFOD which currently operates a network of 7 stations which are monitored 24 hours a day, 7 days each week with two staff manning each station. The current stations are located at:

- Bauerfield Airport (Efate Island)
- Pekoia Airport (Santo Island)
- Lamap (Malekula Island)
- Seratamata (Ambae Island)
- Whitegrass Airport (Tanna Island)
- Sola (Vanua Lava Island)
- Anelcahat (Aneityum Island).



240. Data from each meteorological stations on the outer islands is recorded and then transmitted by voice to Port Vila via HF radio every hour. This data is then relayed electronically to the global meteorological communications network for inclusion in current meteorological regional models which are generated by regional processing centers. The data is then returned to the VMGD in the form of forecast models, alongside other information, in order to develop local forecasts bulletins.

241. There is a risk that the lack of an accurate synoptic weather station may have a huge impact on the development of regional forecast models. Information such as wind speed and wind direction, atmospheric pressure, temperature, rainfall, cloud cover and other relevant data need to be obtained regularly from as many observation locations as possible to ensure accuracy of the models. Each missing observation reduces the accuracy of the forecasts and thus it is essential to have reliable automated and real-time transmission to obtain accurate information in a timely way. The challenge is to identify a suitable mechanism to reliably transmit all the relevant synoptic information from these seven meteorological observing stations back to Port-Vila as the current HF communications systems between them are old and unreliable.

#### *Meteorological Real-Time transmission limitation*

242. The only two-way communications system between the seven stations and the Meteorological Centre in Port-Vila is HF radio. This system is old and unreliable, especially in times of severe weather events and requires upgrading to a more trustworthy solution, especially in the northern and southern part of Vanuatu where HF transmission is often cut due to power failure. This system need to be replaced by a more reliable technology with strong redundancy especially during extreme weather events.

243. The proposed solution is the use of the government proprietary network. In fact, in 2010 the Vanuatu Government built their own data transmission network from north to south call the Global Broadband Network or “eGov Network”. This system, which is reliable, fast and redundant, is already used by the Geohazards Division for real-time monitoring of volcanic and seismic activity in Ambrym, Santo, Gaua, Tanna and Ambae Islands. This system has already proven its’ reliability and will reinforce the positive relationship between VMGD and the Office of the Government Chief Information Officer (OGCIO). The maintenance of this system will be assured by the government itself through the OGCIO.

#### ***Real-Time data analysis limitation***

244. Currently, the Climate Division, responsible of the long term climate-related hazards analysis, and the Weather Forecast Division, responsible of the short-medium term severe weather data analysis are not sufficiently equipped to handle and process real-time data. This limitation could lead to inaccurate meteorological data analysis thereby having a huge impact on regional weather models. On the long-term data analysis, the Vanuatu Climate Division which is responsible for archiving data, conducting data analysis and for applied research on regional climate evolution is suffering from a lack of proper equipment. Rainfall collector’s information and manual synoptic data are entered into CliDe database but without proper capacity in data analysis the regional Simulation Climate Scenario (SIMClim) used is inaccurate. In relation to short-term data analysis, the Vanuatu Weather Forecast Division is suffering of lack of real-time software for synoptic data analysis. Currently data collected is processed manually every hour, there are issues with quality control procedures when manual data is formatted following the meteorological international standard format (SYNOP and METAR). These systems could be improved by automated data treatment and Synoptic Data Treatment Software as recommended by WMO standard procedures.

#### **Absence of Timely Release of Early Warnings on Climate-related Hazards**

##### ***Lack of real-time warning dissemination information***

245. Currently the pathways of release of **early warning bulletins** from the NDMO’s *National Emergency Operation Centre* in Port Vila to the VMGD’s *National Warning Centre*, then to the local communities are paved with communication difficulties. The warning dissemination strategy of both NDMO and VMGD is to focus on the transmission of the information first to each provincial disaster committee, and it is their responsibility to relay the information to the targeted local disaster committee. However, there are issues with this system and in practice there is currently no efficient global warning dissemination system. Local initiatives, often led by NGO (e.g. Red Cross and their HF Radio Information Transmission Network) are trying to fill this gap in certain areas, for example in the isolated island group of Torres.

246. The local VMGD weather observers are all part of Technical Advisory Groups for the Disaster Risk Reduction initiative in each province. Moreover, these observers are also serving as relays to local communities in times of extreme weather events by transmitting information from Port-Vila to the local stations through HF radio. As indicated previously, this communication system is not reliable, especially in times of weather crisis. The need to reinforce real-time exchange information between Port Vila VMGD, provincial centers and local communities was identified during the V-CAP PPG.

##### ***Real-time broadcast information limitations***

247. The quick-flooding that struck the Island of Paama (October 2013) and cyclone Vania that hit the island of Tanna (January 2011) have shown the importance of having effective advisory/information/ warning dissemination. While rural communities are fairly self-resilient in obtaining basic weather information, the Vanuatu Government needs to implement a consistent and reliable real-time warning dissemination program to reduce vulnerability associated with increasingly serious climate-related hazards.

248. Currently the only way to broadcast warning information is via public/private media (television, radio) and through active dialogues with mobile network service operators. At the moment there is no automated climate-related hazards warning system in use in Vanuatu. Part of the end-to-end Early Warning System, the warning dissemination framework needs to be automatized to provide updated information directly to communities, particularly those in isolated areas without access to phones, radio and other services. Provincial centers, major airports (dependent for safety on identification of climate-related hazards), local warning centers (mostly local weather observer offices) and targeted communities need to be linked into this dissemination system.

##### **Adaptation alternatives (with LDCF intervention):**

249. NDMO and VMGD are responsible for public safety during natural disasters; they also assess threats to local populations based on the best available information, and when appropriate disseminate safety information and instructions. Along with the following actions, this comprises an “End-to-End” EWS response:

- The monitoring and warning service (to develop hazards monitoring and early warning services)
- The alert dissemination (to communicate risk information and early warnings)

- The emergency response (to build national and community response capabilities), and
- The government and public action (to systematically collect data and undertake risk assessments).

250. Under this component, LDCF resources will be invested in an end-to-end EWS to improve the capacity of the entire nation to prepare for and respond to the projected increase in climate-related hazards. Firstly, V-CAP will strengthen monitoring capacities of WFOD with the installation of 5 Automatic Weather Stations in the focal islands. This development will be made in parallel with the JICA funded “Strengthening of VMGD Hazards Monitoring Capacities” project which will support the installation of two high quality AWS in Bauerfield and Pekoa Airports to complement the 5 stations funded by V-CAP resources. Together, those two investments will enhance the ability of VMGD to deliver their mission of climate-related hazards monitoring.

251. Secondly, investments will be made by reinforcing the VMGD Hazards Warning Dissemination facilities and providing additional analysis systems to ensure that outer island communities are warned of short, medium and long-term climate hazard impacts. By strengthening the two-way communications systems between outer islands and Meteorological Main Office in Port-Vila, by installing various warning dissemination system in outer islands and by reinforcing the VMGD capacities in real-time weather data analysis, the LDCF resources will finalize the second part of this end-to-end warning system

252. Finally, to strengthen VMGD capacities LDCF will invest in capacity building of VMGD WFOD and VMGD Climate Division by strengthening internal capacity for real-time analysis of climate-related hazards.

253. The installation of 5 AWS, two-way communications and the warning dissemination system will be undertaken in the first two years of project implementation to ensure that VMGD staff has maximum time to learn and benefit from operational and maintenance training on the complete end-to-end system.

254. The outputs and activities are presented below:

**Output 2.1.1 Automated system for real time monitoring of climate-related hazards such as coastal flooding, storm surges, sea-level rise designed, installed and maintained**

255. LDCF resources will be used to set up a complete end-to-end Climate-related hazard Early Warning System. The initial investment is the monitoring system which includes an Automated Weather Station Network of 7 stations spread from North to South Vanuatu to replace the existing VMGD weather synoptic network. Local observers will be trained to ensure proper servicing and maintenance of each AWS. Standard Operating Procedures and Job Descriptions will be reviewed in order to reflect new staff roles and responsibilities as local VMGD agents. This automatic system, linked in real-time to the main Meteorological Office in Port-Vila, will considerably extend the capacities of VMGD Weather Forecast Officers and strengthen the development of regional forecast models. The benefits to this investment can be summarized as follows:

**Improved Vanuatu Meteorological Automated System**

256. For the benefit of better weather synoptic data, the installation of the Automatic Weather Station will be carried out in the five existing weather observations sites including: Tanna (Whitegrass), Ambae (Saratamata), Malekula (Lamap), Vanua Lava (Sola) and Aneityum (Analguahat). These sites are currently manually controlled and managed by local VMGD staff. The stations are comprised of: Anemometer; Relative Humidity and Air Temperature sensor; Atmospheric Pressure; Rain gauge; Solar Radiation; Soil Moisture, and Earth Temperature. Attached to the weather control system and IP transmission system, this AWS will procure reliable and constant data to the main Meteorological Office in Port Vila every minute at no cost. This system is robust and trustworthy, supports extreme weather condition and will require little maintenance to work efficiently in remote outer island stations.





Automated Weather Station for 5 remote outer islands

257. In order to increase existing monitoring capacity at Bauerfield and Pekoa Meteorological Offices, two automatic ceilometer stations will be installed. These ceilometers will monitor cloud coverage and provide consistent weather data information. It will also provide an additional more detailed baseline for the measuring the change in weather systems in these locations as local indicators of climate change.



Automated Ceilometer Station for the 2 main meteorological airport offices

### **Improvement of the Real-Time transmission Network**

258. Reliable Early Warning Systems require a robust real time transmission network. Utilizing the Vanuatu Government Broadband Network, weather data will be transmitted to the Port-Vila main office in a timely manner. Based on the high speed government IP network the Vanuatu Broadband Network links every provincial office to Port-Vila at no additional cost. LDCF resources will be invested to provide the connection from all Automatic Weather Stations to Port-Vila using the Vanuatu Government Network. This transmission architecture will comprise two components:

- i): Link from Automatic Weather Station to the closest eGov tower using a dedicated transmission system (900 Mhz or 2.4 Ghz); and
- ii) Link from each eGov tower to the Port-Vila Meteorological Office via existing government network. V-CAP will purchase a dedicated inter-connection system between the eGov tower equipment and the VMGD dedicated private transmission system in each province where eGov towers are located.

### **Increase in meteorological data analysis capacities of VMGD**

259. To enhance analysis of automatic weather synoptic data by VMGD Staff, technical support in the form of on-site (premises of the VMGD) advanced training by existing meteorological expert partners (e.g. NZ MetService, BOM, Meteo-France etc) will be provided. For the short-term data analysis, weather forecast division will be equipped with Meteorological Display Software and server for data collection and data storage. For the long-term data analysis, climate division will be equipped with new software (Met-Display II,



Met Analysis, GTS) and appropriate hardware, e.g. computers, to analyse in real-time the synoptic information coming from AWS.

260. It is proposed that Installation of the equipment for the improvement of the Real-Time transmission Network will be carried out by the Vanuatu Meteorological and Geohazards Department who are experienced with the proposed equipment. Installation of each Automatic Weather Station will require a Meteorological Expert; a short term consultant will be recruited to supervise these activities.

#### **Output 2.1.2 Timely releases of early warnings related to coastal flooding and storm surges through various public media**

261. LDCF resource will be used to create a Warning Dissemination System comprised of an automated message dissemination system and a provincial/community level climate-related warning display information system. While the telephone system is a useful process, in many outer island project sites, there is limited, if any coverage by the existing networks. As a result, project targeted communities will be equipped with an HF based alarm system to expand upon a demonstration of HF radio Warning Dissemination Systems already installed by the Red Cross in isolated island communities in Torres Island group.

#### **Improvement of the real-time warning dissemination information**

262. Currently, the NDMO works closely with provincial and local disaster communities to relay warning information. However, no efficient warning dissemination system has been developed as yet. A SMS-based system is currently being tested by NDMO in some local communities but this solution is not yet validated, nor will it reach all targeted communities. However, V-CAP will support its implementation through the provision of high-quality information and early warnings as appropriate.

263. In addition, V-CAP will support the live display of climate-related hazards Information/Advisory/Warning in key strategic locations in Vanuatu. These include:

- Warning Display Information on each six (6) provinces
- Warning Display Information on each five (5) outer islands weather stations
- Warning Display Information on each two (2) major Vanuatu airports.

264. This Warning Display Information System will be comprised of:

- A set of screens which will display live information (bulletin/warning/information) coming from VMGD and updated as often as possible
- A set of communication devices (VOIP phone, IP Radio and Live Camera) using the Vanuatu Government Broadband Network capacity, and
- Robust computers for local warning centers.

#### **Increase of the real-time broadcast information capacity**

265. The Warning Display Information needs to be consistent and reliable. Depending on the targeted area/province, specific information could be presented for that location (e.g. a cyclone warning message may vary depending on the cyclone track and volcanic hazards impacts may be restricted to certain areas). A Display Management System would then have to be developed at VMGD to regulate and manage the warning information display on each outer island.

266. In order to develop the Display Management System and Automated Warning Dissemination System, an international consultant will be appointed for 9 months to manage this process. Information/Advisory/Warning data should be automatically updated to the specific area using the two-way communication channels (Broadband Network) developed for Output 2.1.1. Dedicated software will be developed (or purchased) to enable continuous information update to the targeted Warning Dissemination Station 24/7.

#### **Output 2.1.3 Capacity of VMGD and NDMO national and provincial officers in the operation and maintenance of AWS and in the analysis of data strengthened**

267. Implementation of the first two outputs will require strong capacity building support for both VMGD Weather Forecast and Observation Divisions. The installation and maintenance of the Automated Weather System will be supported by an international meteorological expert who will work with and build capacity in local staff from outer islands (12 staff) and four technicians/engineers from the Port-Vila Meteorological Office.

268. It is proposed that these staff members undertake intensive training in the use of meteorological display and climate-related hazards software for forecast officers as well during the installation of these systems. Training on the Real-Time transmission system will be carried out by VMGD who have experience

with the proposed architecture. Training will include workshops, in-field training and simulation exercises for all VMGD technical officers (currently 18 staff) and NDMO officers.

269. The final activity of this output concerns the use and maintenance of the dedicated Automated Warning Dissemination System developed specifically for VMGD for the purpose of the warning dissemination to each outer station. This training will be carried out by the international consultant responsible for deployment of the dedicated Automated Warning Dissemination System.

## Component 2 outputs

270. The specific outputs of component 2 are outlined below:

Output 2.1.1 Automated system for real time monitoring of climate-related hazards such as coastal flooding, storm surges, sea-level rise designed, installed and maintained	
Outline activities :	
2.1.1.1	Procurement and installation of five (5) Automatic Weather Stations composed of wind, temperature, rainfall, barometer, cloud coverage and others for Weather Forecast Observations Sites of Whitegrass, Lamap, Sola, Analguahat and Saratamata
2.1.1.2	Procurement and installation of two (2) Automatic Ceilometer Stations for cloud coverage in Bauerfield and Pekoa Airports
2.1.1.3	Procurement, upgrade and installation of real-time transmission system based on the extension of the current Vanuatu Government Broadband Network from each station to the Port-Vila main office
2.1.1.4	Procurement and installation of Automatic Weather Forecast Software Data Analysis / Weather Data Display and Server equipment for data storage and data handling
2.1.1.5	Procurement and installation of Climate Data Analysis equipment for the VMGD Climate Division
2.1.1.6	Maintenance mission for the next five years (and the entire economic life of the Stations) to all the outer islands Automatic Weather Stations. This will be carried out by engineers/technicians from Vanuatu Meteorological and Geohazards Department VMGD
2.1.1.7	Incorporation of operations and maintenance costs of the information and early warning systems into VMGD budget starting in year 4.
Output 2.1.2 Timely releases of early warnings against coastal flooding and storm surges through various public media	
Indicative activities :	
2.1.2.1	Procurement and Installation of Warning Dissemination System in the premises of the five (5) Weather Observation Stations of Whitegrass, Lamap, Sola, Analguahat and Saratamata. This will include solar powered system units; robust computer system; radio HF system upgrades; and construction/upgrade of an equipment shelter
2.1.2.2	Procurement and Installation of Warning Dissemination System in the premises of each six (6) Vanuatu Provinces consisting on solar powered units, TV screens and ICT equipment (Robust field computer and VOIP phone)
2.1.2.3	Procurement and Installation of Warning Dissemination System in the premises of each two (2) Major Vanuatu Airport (Bauerfield and Pekoa) consisting on solar powered units, TV screens and ICT equipment (Robust field computer and VOIP phone)
2.1.2.4	Development of an Automatic Messaging Broadcast System to disseminate automatically information/advisory/warning to each remote warning dissemination system (as defined above in 2.1.2.1, 2.1.2.2 and 2.1.2.3). A medium-term international consultant will be hired for this purpose.
2.1.2.5	Procurement and Installation of HF Alert System for seven (7) communities (project targeted communities) connected to existing HF Radio Station.
2.1.2.6	Organize at least two mock drill exercises in the year 3 of the project. Those events will be coordinated by the VMGD and involve NDMO, appropriate NGOs and other relevant stakeholders, and at the outer island level, coordination will be supported by local VMGD staffs and provincial officers from respective islands.
2.1.2.7	Develop Public Private Partnerships with (Digicell and TVL) for the dissemination of early warnings to its subscribers
Output 2.1.3 Capacity of 18 VMGD staffs in the operation and maintenance of AWS and in the analysis of data strengthened	
Indicative activities :	
2.1.3.1	Organize technical training sessions for VMGD Observation Division Staff for installation, use and maintenance of the Automatic Weather System equipment. A short-term international consultant will be hired for this purpose.
2.1.3.2	Organize technical training sessions for VMGD Weather Forecast Division Staff for the use of Meteorological Display software. A short-term international consultant will be hired for this purpose.
2.1.3.3	Organize a refresher training session for VMGD Observation Division Staff for use and maintenance of the communication equipment. A short-term international consultant will be

	hired for this purpose.
2.1.3.4	Organize technical training sessions for VMGD Weather Forecast Division and Observation Division Staff for the use and maintenance of Warning Dissemination System Framework. A short-term international consultant will be hired for this purpose

### 2.5.3 Component 3: Climate Change Governance

UNTFHS Joint Project (UNDP-FAO-UNICEF)	\$ 300,000
Pacific Risk Resilience Project – UNDP	\$ 800,000
Indicative co-financing	\$ 1,100,000
LDCF project grant requested:	\$ 300,000

#### Outcome 3.1 Climate change adaptation enabling policies and supportive institutions in place

**Output 3.1.1 Legislation and national/sector policies with impacts on climate change adaptation reviewed and a policy reform agenda developed and implemented (e.g., finalization of draft National CC Policy; incorporation of CC into the EIA Policy, and sector policies in forestry, coastal fisheries, agriculture, water and sanitation; localization of existing policies).**

##### **Baseline (without LDCF intervention)**

271. Currently there are numerous government policies, plans and frameworks that address climate and disaster risk in Vanuatu. In 2008, revisions were made to the *Vanuatu Priority Action Agenda* (PAA) to include climate change and disaster risk reduction directives. A draft *National Climate Change and Disaster Risk Reduction Policy* is currently being developed. When this work is finalized, the government has indicated they will then focus on reviewing the findings from the *Risk Governance Assessment Report*. The *National Action Plan (NAP) on Disaster Risk Reduction and Disaster Management 2006 – 2016*, was reviewed in 2010 and a revised set of priorities was established for work beyond 2011.

272. Although the *Priority Action Agenda* emphasizes the need to integrate CCA into the various policies and plans, most departments have struggled to implement this action plan within their scope of services. The Department of Education and the Department of Forestry are mainstreaming the CCA agenda into their policies and have commenced implementation with support from development partners. However, other departments do not have clear policy documents from which to incorporate CCA components and most line agencies will require technical assistance to complete the mainstreaming process.

273. The NAB provides as a useful mechanism for national level integration of environment and climate change related policies and plans. The UNDP Pacific Risk Resilience Project recently undertook a comprehensive review of the NAB and the governance framework for climate change in Vanuatu and highlighted the strengths and weaknesses in the current system. The results, in an internal NAB document titled *Risk Governance Assessment Report* contain a highly relevant analysis of climate change governance issues in Vanuatu.

274. There are a number of policies and plans that are in urgent need of integration of climate change into the relevant planning frameworks. For example, the Draft *National Integrated Coastal Management Framework* (NICZMF) and Implementation Strategy for Vanuatu, in draft form since 2010 has yet to be finalized. Without intervention it is unlikely that the government will be able to identify resources for a process towards its completion. In addition, there is an opportunity for this document to form the basis for a structured approach to coastal adaptation planning for climate change and in addition could be significantly strengthened by incorporating field experiences gained during implementation of V-CAP. However, without the support of V-CAP it is unlikely to be completed.

275. Additionally, the Environmental Impact Assessment legislation and policy currently has limited scope for the integration of climate change into its application. With the coastal zone as the focal area for development in Vanuatu, including port, tourism and industrial infrastructure, it is vitally important that the EIA related policies and guidance recognize the implications of climate change, in particular the impact of a 1 meter (or more) sea-level rise on coastal infrastructure. Without additional support development will continue without taking into account full cognizance of the impacts of climate change.

276. The National Climate Change Adaptation Strategy for Land-Based Resources (2012 – 2022) Second Draft has been developed and provides useful guidance in the incorporation of climate change into

management of land-based resources. This strategy is currently being incorporated into sectoral policies and plans.

277. The Department of Agriculture has embarked on a process of revising the national agriculture policy and process for delivery of appropriate services at the community level. This plan will be developed during the period 2014-2015. Without specific interventions on integration of climate change related concerns into the plan – it is unlikely that they will be comprehensively addressed.

#### **Adaptation alternatives (with LDCF intervention):**

278. As a first step, V-CAP will provide assistance to NAB to continue the process of “stock-taking” national initiatives seeking to integrate climate change into departmental/sector policies, plans and procedures. The results of this stock-take will then be used to inform specific tasks for V-CAP follow-up. The identification of CCA policies that require supportive legislation from the Government of Vanuatu will also be identified in the V-CAP funded stock-take, with legislative TA identified as necessary.

279. The finalization of the National Integrated Coastal Management Framework (NICZMF) and Implementation Strategy drafted in 2010 will be critical to the implementation of V-CAP. It provides the overarching framework for delivery of coastal climate change adaptation solutions for Vanuatu. Thus, V-CAP has a clear role to ensure its finalization and to support field testing of its implementation. The DEPC and DOF have committed to support this process.

280. Those government departments or sectors operating without a cohesive CCA integration policy, as well as those agencies with ineffectual or outdated policies and procedures will also have access to a limited pool of V-CAP funded TA to contribute to the integration of CCA into policies, procedures and/or plans. These policies and plans will include an analysis of gender and social inclusion factors and the requirements for mainstreaming and/or targeted interventions to address equity issues.

281. Environmental Impact Assessment legislation and policy needs to be urgently updated to ensure that climate change adaptation is incorporated into its application. The development pressures on the coastal zone will continue to increase, thus making the incorporation of climate change adaptation considerations essential to the EIA process. Additionally, there is a natural fit between the development of the NICZMF and the revision of the EIA legislation to incorporate climate change.

282. In addition, specific policies and plans identified during the PPG for support include the Agricultural Policy planned for review in 2004-15. Given the reliance of rural communities on agriculture and the current issues, i.e. disease, low production and pests, it is vital that climate change adaptation is integrated into this policy. V-CAP will provide some limited support to this process and will work with other development partners to ensure that comprehensive solutions to agricultural issues are available to communities for deployment through existing systems.

283. Support provided by V-CAP in creating department and sector wide approaches to CCA will allow the Vanuatu government to implement a cohesive approach to service delivery - with follow-up support and supervision by the NAB, a wide range of potentially adverse effects of CC will be successfully mitigated.

284. Lessons learned from CCA policy development activities will be shared with relevant government agencies and development partners to enhance knowledge of CC integration options and practices, as well as to build capacity in cross-cutting policy development.

Output3.1.1 Legislation and national/sector policies with impacts on climate change adaptation reviewed and a policy reform agenda developed and implemented	
Indicative activities:	
3.1.2.1	Support the NAB through the PMU to develop a stocktake of the current sectoral policies and plans in place at the national, provincial and local levels currently incorporating climate change and those in need of review to ensure community-approaches to climate change are incorporated and support the production of policy reform agenda
3.1.1.2	Support the finalization of the Draft National Integrated Coastal Management Framework in conjunction with the Fisheries and Environment Departments and related agencies and departments, to ensure the NICMF is developed to support appropriate local delivery.
3.1.1.3	Support the integration of climate change adaptation into relevant sector policies and plans, including but not limited to: <ul style="list-style-type: none"> <li>• Environmental Impact Assessment</li> <li>• Agriculture Policy</li> <li>• Forestry Policy</li> <li>• Fisheries Policy</li> <li>• Water Resources Policy</li> </ul>
3.1.1.4	Maintain on-going dialogue with the NAB and related members to ensure V-CAP sites are able to serve as case-studies and field testing sites for the delivery and implementation of new and modified policies and plans.

## **OUTCOME 3.2 Human resources in place at the national, provincial and community levels**

**Output 3.2.1 Capacity building of key national and provincial government agencies (DEPC, PWD, Department of Internal Affairs, Departments of Fisheries, Forestry, Water) in areas of compliance and enforcement, monitoring and evaluation and mainstreaming of climate-related policies and regulations.**

### ***Baseline (without LDCF intervention)***

285. Building the human resource capacity of the Government of Vanuatu to effectively implement CCA activities is a task delegated to the recently created Ministry of Climate Change. Currently however, there is no systematic process in place to assess and/or develop skill sets required for successful mainstreaming and operation of CCA/DRR strategies. Many relevant government departments working with CCA have identified the need for capacity building and training to expand and supplement support being provided by external and regional agencies – particularly in relation to policy and integrated planning.

286. The 2013 UNDP Pacific Risk Resilience Project carried out a comprehensive review of the Government of Vanuatu's human resource capacities, information management systems, knowledge management and monitoring and evaluation (M&E) approaches as they relate to achieving CCA and DRR objectives. This report contains an analysis which is highly applicable to V-CAP Output 3.2.1 and is available to the NAB and its' partners for review.

287. There is yet to be an also effective *Monitoring and Evaluation system* in place to assist the government in providing useful information and lessons learned from CCA activities. At present there is little, if any, performance feedback on government programs during or following implementation, which leads to unresolved issues that negatively affect program outcomes. This absence of good quality information arising from the lack of functional M&E serves to limit the government's progress toward evidence-based policy making. As a result, some CC/DRR achievements are not recognized by government and lessons learned from projects are not adequately disseminated to prevent replication of errors.

288. In 2008, the Vanuatu government established an M&E Unit within the Prime Minister's Office (PMO) to work with Sector Policy Analysts within the Department of Strategic Policy and Planning and Aid Coordination, with Expenditure Analysts within the Ministry of Finance and Economic Management, and with line Ministries to monitor implementation of government programs and activities. This Unit provides reports to the Council of Ministers and the Office of the Prime Minister, it doesn't provide information or report to the PMU or NAB on CCA or DRR initiatives.

289. The successful implementation of V-CAP will rely on building the M&E competency of government officials at national, provincial and local level to gather and analyse data on project activities and outcomes and to draw out and share lessons learned from V-CAP activities.

### ***Adaptation alternatives (with LDCF intervention):***

290. V-CAP will support government departments and other implementing agencies, including International NGO's working in the field of CCA, to standardize their data collection systems. V-CAP will work through existing networks to bring relevant stakeholders together to mainstream processes, facilitate development of common M&E approaches and build internal capacity rather than depending on external sources. The TA required to establish and strengthen existing M&E systems will be provided under V-CAP.

291. V-CAP will work with partners to develop harmonized data collection systems to lead to greater efficiency in implementing CCA measures by government departments and relevant NGO's. It will also allow for internally sourced capacity building, as their will be a greater understanding of the effective CCA programs and techniques currently being administered within Vanuatu. In this way, replication and expansion of successful CCA projects will be easier. In addition, V-CAP will provide comprehensive training to government officers, field staff and development partners to ensure appropriate implementation at each V-CAP field site in conjunction with component 1. This will include both on-site and cross-site training.

Output 3.2.1 Capacity building of key national and provincial government agencies (DEPC, PWD, Department of Internal Affairs, Departments of Fisheries, Forestry, Water) in areas of compliance and enforcement, monitoring and evaluation and mainstreaming of climate-related policies and regulations

Outline activities:

- |         |  |
|---------|--|
| 3.2.1.1 | Based on a Training Needs Assessment (TNA) develop an innovative and comprehensive 5-year Capacity Building Program for key national, provincial and local officials in community involvement in the delivery of climate change adaptation solutions to be delivered through V-CAP |
| 3.2.1.2 | Based on the TNA deliver the 5- year capacity building program for key national, provincial and local government officials and key field staff working with local communities.   |



3.2.1.3	Ensure consistency in the delivery of the of the training through the appointment Communication and Training Coordinator to ensure integration of the training and ensuring training is meeting the needs of project related activities, particularly at the field sites.
3.2.1.4	Regular monitoring and evaluation of the training and adjustment of the training plans through the annual work planning process.

### **Output 3.2.2 Communities empowered to deal with climate change impacts in the coastal zone through participatory approaches in vulnerability assessments, planning and community-based adaptation measures and capacity building**

#### ***Baseline (without LDCF intervention)***

292. There are no CC vulnerability assessments or CCA plans in most communities in Vanuatu. Further, the M&E capacity of local governance structures including Area Councils, which primarily consist of community-based representatives, are extremely limited. There is also a significant lack of formal institutional structure at local level for effective planning of adaptation measures. Without V-CAP assistance, target communities will not benefit from participatory vulnerability assessments nor would they be likely to act on their own to successfully mitigate the adverse impacts of CC.

293. Despite this lack of capacity, communities and Area Councils are being asked to develop and implement a range of policies and plans at village level. This currently includes the formulation of community disaster committees (CDCs), water committees, educational and health committees and fisheries groups. Often the same few individuals are members of all of these communities which means they do not have sufficient time to meaningfully contribute. There is an urgent need to streamline the operation of these committees to ensure they are effective and guided by an overall plan that is supported by sub-committees and technical assistance as needed.

Adaptation alternatives (with LDCF intervention):

294. Within V-CAP target sites, community level structures similar to CDC's will be established and supported to competently conduct vulnerability assessments, CC Strategies and Plans, based on adequate knowledge of CC issues and adaptation measures. Vulnerability assessments with a specific focus on CCA and DRR will be administered at V-CAP sites, which can subsequently be replicated in communities throughout Vanuatu. The participatory process involved in undertaking these assessments and planning adaptive measures will empower local communities to create CCA plans that are unique to their specific challenges and vulnerabilities.

295. The Community Climate Change Adaption Strategy (CCCAS) will form the basis of a comprehensive community development plan for each targeted community. Sub-plans will also be developed under this plan including community disaster response plans, water management, upland management and coastal management plans. V-VAP will support the DLA to develop an integrated structure that will also serve as a guide when working with local communities and groups.

296. A cohesive capacity building program involving CDC and Area Council representatives will take place to ensure that there is a mainstreamed approach to CCA throughout all six V-CAP's sites. Supporting representatives from the various V-CAP communities to visit and learn from relevant and successful initiatives in other parts of Vanuatu will facilitate replication and knowledge sharing.

Output 3.2.2 Communities empowered to deal with climate change impacts in the coastal zone through participatory approaches in vulnerability assessments, planning and community-based adaptation measures and capacity building	
Outline activities:	
3.2.2.1	Assist DLA in identifying and drafting initial guidance on the "best practice" governance at the community and village level to support community climate change adaptation through CCCA Planning processes and ensure integration of those plans under the various other levels of community planning, e.g. water, coastal management, agriculture, fisheries and upland management
3.2.2.2	Develop community level model demonstrations of integrated governance approaches to support community adaption to climate change in each of the V-CAP field sites.
3.2.2.3	Based on the above in year 3, provide technical support to DLA and partner agencies, through the NAB, to deliver guidance in the form of policy, on integration of climate change adaption to existing and developing community structures to enhance resilience to climate change.

## 2.5.4 Component 4: Knowledge management

GoV DEPC	\$ 100,000
UNTFHS Joint Project (UNDP-FAO-UNICEF)	\$ 331,344
Pacific Risk Resilience Project – UNDP	\$ 600,000
Indicative co-financing	\$ 1,031,334

LDCF project grant requested: \$ 350,000

### Outcome 4.1 Increased awareness and ownership of climate risk reduction processes at the national and local levels.

297. Increasing awareness and ownership for climate risk reduction processes is a critical component of VCAP. It will be important to ensure that capacity is developed simultaneously at community, area council, provincial and national level. This will require a well-planned and integrated approach built on the results of a thorough needs assessment of the various target groups.

#### **Baseline (without LDCF intervention):**

298. Government agencies, civil society organizations (including NGOs and churches) and donor partner projects have made significant progress in improving public understanding of climate change issues and impacts through use of a wide range of teaching/learning strategies. Successful techniques have included radio shows, television programs, newspaper articles, video/films, school curriculum, numerous activities held during national climate change weeks, production and distribution of IEC materials etc. However, many of these activities have focused on Port Vila with limited reach to outer island locations.

299. In V-CAP field sites there are limited opportunities for communities to participate in climate change and disaster risk reduction awareness activities. Some locations do not have access to radio, television or telephones. Internet is only provided at some rural high schools, generally where Peace Corp is providing internet technical support. Further, stakeholders in all V-CAP sites reported that the absence of extension officers means they do not receive information on climate change, local impacts and adaptation options.

300. However, in locations where existing projects have been or are being implemented by development partners local communities did report some level of awareness of climate change. CC information was typically provided by project personnel to communities through village meetings. However, the village meeting setting generally does not provide opportunity for in-depth discussion of issues, and women and youth often do not actively participate in these sessions. As such, there is substantial opportunity to upgrade approaches to delivery of CC information in V-CAP sites.

301. Throughout Vanuatu, various pilot activities have demonstrated good adaptation and risk reduction measures. However, documenting, sharing and the up-scaling of these demonstration projects have been quite limited. Therefore, V-CAP can provide an important service by supporting the development of locally “tried and true” adaptation technologies through the use of locally appropriate communication strategies. Simply posting the results on government, agency or project websites is not a suitable approach to enhancing knowledge management to the rural Vanuatu context.

302. Four of six V-CAP field sites have high schools that could play a pivotal role in testing climate change education and awareness materials that are centrally developed. In this regard, the UNDP PACC project has successfully involved high school students in constructing an integrated 3D map of Epi Island which can serve as a platform for planning local CC activities. There is potential to scale up this activity in other schools.

303. Given the PMU’s role in drawing together key CC agents in Vanuatu, it could play an important function in documenting and showcasing the most successful approaches communicating messages on climate change. In this way, it could make a significant contribution to the delivery of an integrated and targeted education and awareness campaign.

304. In developing CC communication materials it is important that these resources are user-friendly and gender sensitive. For example, rural communities converse in local vernacular and would be most interested in materials that are easy to understand and that concern topics most relevant to them. In addition, information, education and awareness materials should present CC awareness messages targeted to specific audiences based on their roles and responsibilities in the community. For instance, information about food handling, water and sanitation issues could most effectively be targeted at women.

#### **Output 4.1.1 Best practices are captured, documented, and distributed to all local and national stakeholders and shared globally in appropriate mechanisms (development, populating and maintenance of national website for CC) through the NAB (National Advisory Board)**

Adaptation alternatives (with LDCF intervention):

305. V-CAP interventions will build on the existing communications work that promotes solid technical solutions to climate change adaptation in Vanuatu. There are a pool of existing “climate change adaptation technologies” already deployed in the field in Vanuatu. These materials will be compiled in easy to use information and awareness packages and deployed to local stakeholders. This will include developing and/or compiling extension materials that can be used in community-based Component 1 activities.

306. As V-CAP progresses, lessons learned and best practices will also be captured, documented, and distributed to local and national stakeholders. In particular, lessons will focus on processes for participatory engagement of communities in climate change adaptation planning to share with other communities and all levels of government. Video documentation of participatory CC processes “in action” will make a valuable contribution to cross-site learning and replication efforts. To carry out this activity, V-CAP will provide suitable equipment and training in video documentation.

307. V-CAP will also support capturing, documentation and dissemination of lessons learnt at the national and global level by: uploading best practices on the NAB website; by participating in national level dialogues and by preparing articles and papers for presentation of regional and global forums. Particular emphasis will be placed on showcasing climate change solutions that meet the particular needs of vulnerable communities and groups including women, children and people with disabilities.

308. A part-time Communication and Training Coordinator will be engaged to lead and manage this component of the project. This position will be based in the PIU and will work closely with the field staff and the PMU to ensure that lessons from V-CAP, and other related climate change initiatives, are captured and shared through the most appropriate means.

Output 4.1.1 Best practices are captured, documented, and distributed to all local and national stakeholders and shared globally in appropriate mechanisms	
Indicative activities:	
4.1.1.1	Baseline survey on community awareness of climate change, past successful communication programs and reviews of existing materials to contribute to an education and awareness programs.
4.1.1.2	Development of a time bound and costed comprehensive communication strategy for V-CAP incorporating capturing, documenting and distributing of lessons learnt with a focus on full involvement of local communities in the process.
4.1.1.3	Implementation of the communication strategy by the Communication and Training Coordinator with full engagement of local communities through training, equipment; and
4.1.1.4	Monitor implementation of the communication strategy on an annual basis and at the end of year two undertake a comprehensive review and evaluation to ensure long-term effective delivery with full community consultation

**Output 4.1.2 Awareness, training and education programs developed and implemented for e.g. schools, households and the private sector; translated into Bislama and French as applicable and working with ongoing initiative.**

309. Opportunities will be identified to foster partnerships with the private sector, particularly in relation to planting species that are optimal for erosion control and that also provide economic benefits. For example, *tamanu*<sup>21</sup> trees produce *tamanu* oil and vetiver grass which is a very effective plant used for erosion control when planted alongside roads. Particular emphasis will be placed on species that produce essential oil. Private sector engagement in the promotion and provision of seeds and propagates is strongly encouraged and will need to be investigated.

310. Existing climate change awareness materials will be developed and disseminated to all primary schools within V-CAP sites and teacher training will be provided. These materials will be developed in Bislama to ensure they will be used and beneficial to the wider community.

311. For the four secondary schools in V-CAP target areas, a climate change teaching package will be developed and teacher in-servicing provided. In addition, schools will be supported in using the 3D model approach demonstrated by Epi High School with the support of the UNDP PACC project.

<sup>21</sup> *Calophyllum inophyllum* an indigenous tree species found throughout Vanuatu. This species has a high retail value for local communities



#### Output 4.1.2 Awareness, training and education programs developed and implemented

##### Outline activities:

4.1.2.1	Develop an annual “Private Sector and climate change dialogue’ to identify opportunities for collaboration between the private sector and communities in climate change adaptation based on a framework developed in yea 1 of the project.
4.1.2.2	Based on the communication strategy developed in activity 4.1.1.2 implement a school education program supported by appropriate materials and equipment including 3D monitoring.
4.1.2.3	Document and share lessons learnt and best practices through the communication strategy developed in activity 4.1.1.2
4.1.2.4	Maintain a project website, linked to the main climate change PMU operated portal for Vanuatu, with up-to-date information on the progress of implementation of V-CAP with all appropriate communication materials available to the wider community.

## 2.6 Key indicators, risks and assumptions

### **Key Indicators**

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

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

### **Risks and Assumptions**

314. In line with UNDP project risk management practices, a Risk Log has been prepared which outlines the major risks and proposed mitigation actions (see Annex 9).

315. A key risk in attempting to work simultaneously in six relatively isolated sites (5-10 villages per site), located in eight separate Area Council jurisdictions, and spread over six provinces with different administrative systems are expected logistical project management issues that could negatively affect the timely and effective delivery of V-CAP activities if not carefully managed. Given that many V-CAP communities are functionally accessible only by plane (some of which only operate once or twice per week) and/or by boat (often with infrequently scheduled trips and also dependent on good weather conditions), travel time within and between sites will be time consuming.

316. The V-CAP design will address this risk through a number of measures including: the placement of permanent staff in field offices; ensuring project field staff receive comprehensive training in project planning and management; conducting comprehensive annual work planning processes; and ensuring that each field site has the best possible communication system available including a good connection to the National V-CAP Office. Comprehensive field monitoring visits will also ensure high quality delivery of the V-CAP program. In addition, INGOs with a proven track record and previous experience in particular geographic areas will be contracted to deliver support services in hard-to-serve sites.

317. An additional risk involves the need to ensure that V-CAP can meet its' aims and objectives given existing national and provincial government capacity constraints. There are a limited number of civil servants who are keen to deliver government services to isolated communities and the significant financial resource constraints facing most government agencies further impede effective field work. As such, formal agreements and work plans will be developed with key government partners including DOF, DOE, DLA, DOA and PWD to deliver on specific project outputs. A monitoring and evaluation plan will also be developed (and agreed by all implementation partners) to ensure systematic assessment of these arrangements.

318. Lack of government capacity will be addressed by appointing project-funded Field Officer as well as other Technical Advisors. In addition, INGOs will be contracted to deliver specific components of the project and provide institutional support to communities, area councils and provincial governments as needed. INGOs will be directly contracted to conduct one or more of following tasks in particular sites; carry out vulnerability assessments; assist in the development and implementation of community climate change adaptation plans (CCA-Plans) and/or delivery of specific project components such as DRR, MPAs, agriculture extension and WASH.

319. The project will also finance a series of "Training of Trainer" events so that involved community members themselves are able to become conduits for knowledge sharing and capacity development on their respective islands. It will be important to ensure that women, youth and people with special needs are included in these training programs.

320. A key V-CAP risk management strategy will be the engagement of a full-time Gender, Planning and M&E Officer who will work within the PIU. This position will also assume overall responsibility for ensuring that gender equity and social inclusion approaches, strategies and interventions are fully mainstreamed into all V-CAP activities. In addition to risk management, the "Gender, Planning and M&E Officer" position will provide a number of additional benefits including assurance that: (i) high quality data is systematically gathered, analysed and used to improve project performance in accord with the project Log Frame and M&E strategy, (ii) the project M&E system adequately incorporates gender and social inclusion indicators and targets (iii) the M&E capacity of the PIU is strengthened, and (iv) the capacity of the PIU to undertake gendered CC and social inclusion analysis and intervention is enhanced and reflected in national policies.

321. The key assumptions are that communities are willing to participate in the process of undertaking vulnerability assessments and associated planning process. In addition, that sufficient governance structures are in place at the community level to support this process.

322. Additional assumptions are that communities are willing (as was expressed to the PPG team) to utilize traditional practices, i.e. tabu areas, and link to broader processes to build resilience in coastal ecosystems. Finally, that suitable “soft infrastructure” investments have demonstrable impact on marine ecosystem resilience within project period.

## 2.7 Cost-effectiveness

323. As an alternative, undertaking investments in climate change in “single sector” approaches outside government frameworks is not an option. There are a wealth of climate related project in Vanuatu – often responding to a single climate related issue, for example in response to a drought event build a large number of water tanks, or in response to a cyclone – undertake DRR planning – without funds to actually implement the plan. This is the current situation and it is not meeting the needs of communities to holistically address the challenges of climate change.

324. It is already recognized that the average annual loss from tropical cyclones is about US\$37 million in terms of damages to buildings and other infrastructure and to agriculture, which is a major sector of the economy (Annex 2). The majority of this damage is in the coastal zone where infrastructure concentration is greatest from wind and flooding due to rain and storm surges. Thus, the cost of V-CAP interventions in EWS and enhanced physical planning must be compared against the potential for loss from cyclones and other climate related events.

325. The reality is that there are few government resources being deployed at the area council or community levels beyond the provision of education and basic health services. In the past there were government “field officers” at the provincial and local levels to address the needs of communities. These “field officers” were responsible for a range of sectors including agriculture, livestock and fisheries. However, in the past 10-15 years these extension and support services were cut off due to national budget reductions and cost savings. This has today resulted in a “centralized” model of development and provision of government services. Often at the national level due to the additional support from donors to cash-starved local agencies - often priorities move from a strategic “national program” delivery focus towards a project oriented approach – often working outside official government systems. These issues were raised on a number of occasions, in particular by the Secretary-General’s of the provinces who were charged with the deployment of scarce resources to meet the needs of their communities. This situation is not conducive to long-term sustainable programs to address climate resilience in an integrated manner.

326. The government has recognized this and it now promoting a new “decentralized” model of development. The Government is in the process of finalizing boundaries of Area Councils, establishing Area Councils with various community representatives, and appointing funded Area Secretaries. Funds will flow from the national budget through provinces to be allocated at the level of Area Councils. This makes sense, and V-CAP will support this model and not duplicate efforts. This will also result in cost-savings.

327. Thus, V-CAP will not develop as a “project approach” with a large team outside the proposed government decentralized model. Rather V-CAP is based on delivery of an effective, efficient and decentralized model that integrates to build long-term government capacity to deliver sustainable approaches to climate change adaptation, particularly at community level through Component 1 activities. The PPG team identified the need for low cost, easily replicable and locally suitable approaches that can be readily adopted to ensure direct and indirect benefits over the long-term.

328. V-CAP will not undertake substantial investments in the identification of “new adaptation” technologies – there has already been substantial allocations of fund to this approach. Rather V-CAP will focus on the utilizing the technologies developed under a wealth of other climate change project by donors including GIZ, UNDP, World Bank and other organizations and seek to deploy these CC pilots, models and demonstrations initially to V-CAP target sites and then provide for further dissemination by provincial agencies. It is vital that each of the technologies identified are suitable for the local conditions, cost effective and interest local communities. In addition, this will enable the creation of synergies and cost-effective “joint delivery platforms” to build community and national level climate change resilience.

329. V-CAP will also decentralisation capacity building exercises through the formation of “expert” hubs in communities that are able to demonstrate success in particular thematic approaches being delivered by V-CAP (e.g. MPAs in South Malekula, community level adaptation planning in Torres). Thus, rather than bringing trainees to the capital to undertake training, V-CAP will support training in field locations with communities sharing “real-life” approaches to the delivery of programs. This will be more cost-effective than bring trainees to the capital for training.

330. In terms of delivery of infrastructure, V-CAP will not only deploy “hard” approaches. As outlined, the challenges to road maintenance are often not related to the number of vehicle, but rather the climatic situation whereby rainfall events, erosion and poor water management are more damaging to roads. Thus,

V-CAP will work with those agents delivering “hard” solutions such as VTSSP and provide incremental support through the provision of softer “natural” infrastructure solutions to maintain the roads. In addition, communities indicated a commitment to the PPG team to lead in the “soft” maintenance works and thus provide a more cost effective long-term solution.

## 2.8 Sustainability

331. The project has been designed through extensive consultation with government agencies, development partners, specialist agencies and through detailed consultations and dialogues with local communities, the key beneficiaries (see Annex 4).

332. The sustainability has been considered at a number of different levels, and particular efforts have been made to align with government priorities, policies and new initiatives. As indicated earlier, V-CAP will play a major role in supporting specified elements of the NAPA.

333. V-CAP was designed through extensive, in-depth consultation with a wide range of project beneficiaries in the outer islands and with national and island-level governments (see Annexes 4-6). A purpose of this consultation process was to understand the real CC needs of outer island communities and to assess their capacity to meet these needs – either on their own or with the assistance of the project. V-CAP is designed to build on community strengths and capabilities and to maximize CC adaptation benefits for current and future generations. The V-CAP design assumes that sustainability can only be achieved by establishing processes that build and retain local ownership and commitment.

334. V-CAP was also designed on the premise that whole-of-community engagement and ownership is critical to achieving sustainability of benefits. As such, the roles and responsibilities of both women and men, and well as the younger and older generations in natural resource use and management have been carefully assessed. All V-CAP interventions will ensure that the collective and unique needs of all community and area council members is taken into full account and project impacts carefully monitored from a gender and generational perspective. In addition, V-CAP will ensure that the views of people who traditionally have limited voice and direct engagement in community and area planning process (i.e., women, youth and persons with disabilities) are given opportunities for active participation.

335. A key element of sustainability is the opportunity V-CAP presents to demonstrate the implementation of the Act on Decentralisation (Amendment 2013) to strengthen the planning processes at the Area Council level. Through its’ support to the DLA and identified Area Councils, V-CAP will proactively demonstrate implementation of the Amendment, and in so doing, will serve as model for other initiatives throughout Vanuatu. V-CAP provides the opportunity for full integration, mainstreaming and implementation of CCA planning into all local development planning processes in Vanuatu. Lessons learned from this process will be valuable and relevant to decentralization at all levels.

336. Finally V-CAP will be financed in a “tiered” manner to assist in the transition to mainstreaming the adaptation approaches to building resilience into on-going government policies and practices. In years 1 and 2 substantial efforts will support the integration of CCA into local development planning processes, while years 3 and 4 will focus on implementation. Final years of the program are designed as monitoring and ensuring the lessons established are mainstreamed. This is also reflected in the higher budget allocations and V-CAP technical support in years 1-3.

337. Component 1 will integrate climate risks into the existing outer island development planning frameworks and facilitate climate change adaptation financing with existing and future financial resources and as such, will contribute to the overall sustainability of project results.

338. In particular, the project will achieve sustainability through the following approaches:

- **Institutional sustainability:** Capacity building of government and non-government institutions is an integral element of the proposed project and is considered critical for sustainability. In particular it will insure that climate change adaptation is fully integrated into local level planning initiatives through government institutions with technical support and with committed funding from the national government. For example, Component 1 builds capacity of local communities, especially Area Councils to support development of climate resilient eco-systems and livelihoods. This includes improved management of CCAs/MPAs, community-based assessments of the health of marine resources, and implementation of locally-tailored, simple, and resilient fisheries activities. At the same time, the project will build the capacity of relevant national level government agencies through the recruitment of project-funded technical officers, collaboration with existing and upcoming initiatives working on related objectives, and will ensure the sharing of lessons learned.
- **Financial sustainability:** Financial sustainability is key to the long term success of V-CAP. The project will seek to support newly identified government processes (Decentralisation Act- 2013 Amendment) to deliver resources to local communities. In addition, it will build capacity for local communities, based on their CCA Plans to seek additional financing through existing mechanisms,

e.g. Small Grants Fund (SGP) and Pacific Risk Resilience Project (PRRP) for sourcing funding for the implementation of their plans. Additionally, V-CAP will build upon existing government budgets such as PWD and also complement support from other donors such as AusAID in their support to VTSSP. Finally, V-CAP will invest in scaling up and distributing the lessons learnt from the pilots and approaches of other donors such as GIZ, USAID, BMU and the Asian Development Bank. The sustainability of the information and early warning systems in Component 2 will be assured by incorporating operations and maintenance costs in the annual budget of VMGD and by enhancing the capacity of relevant staff. In relation to maintaining the infrastructure, firstly “climate proofing” should provide a longer usable life, and in addition, local communities in V-CAP have agreed to engage in the maintenance of the infrastructure – in particular footpaths and related works.

**Environmental Sustainability:** The project’s focus on enhancing the resilience of marine resources (especially already vulnerable reef resources) to future climate change is based on the premise that maintaining the health of upland and associated marine ecosystems is the most effective way of building natural resilience. This view is fully supported by specific activities supported in the project. Addressing upland management together with coastal and marine ecosystems in a holistic ridge to reef manner will ensure better environmental outcomes. The support to strengthening and expanding the Marine Managed/Protected Areas, which will improve the health of coastal habitats including mangroves, seagrass and importantly coral reefs – and spill-over effects from increased productivity/growth of fish are likely to impact areas beyond CCAs. Reducing pressure on coastal and marine resources, including through the use of FADs, will also enhance ecosystem health.

339. Through the above measures the, V-CAP measures can be mainstreamed, expanded and demonstrate suitable long-term sustainable approaches to the implementation of CCA initiatives in Vanuatu. A detailed exit strategy will be prepared by the PIU. However, the broad exit strategy will be to handover full implementation to the Local Area Councils by year 3-4 and then provide assistance in monitoring and evaluation of activities.

## **2.9 Replicability**

340. V-CAP will demonstrate a full and comprehensive approach to the implementation of participatory community-based approaches to enhancing the resilience of coastal communities. It will test, pilot and implement improved models of governance for communities to develop climate resilient approaches to addressing climate change. In addition it will improve the early warning systems for rural communities in Vanuatu and support and integrate disaster risk reduction into community level adaptation approaches. It will scale up through the development of comprehensive training programs and ensure integration into national level policies and plans. Systematic contributions to the Adaptation Learning Mechanism (ALM) and hosting of national workshops development of planned approaches to addressing climate change resilience will be ensured. Synergies will be created to other regional processes and projects (such as those undertaken by GIZ) while the global network of UNDP, assisted by the Fiji Multi Country Office and Region-based Technical Advisors, will play an additional role in disseminating good practices to other countries..

341. V-CAP will facilitate exchanges between Area Councils and communities in the field sites. Where one field site is demonstrating high quality work in a particular theme, i.e. South Malekula on Community Conservation Area or Epi on upland management, it will be used as a case study and “learning laboratory” for the other V-CAP sites. This will facilitate the more rapid sharing of approaches, ideas and facilitate replicability. Additionally, the communications strategy will ensure the documenting and sharing of specific successful approaches in the field.

342. One rationale for covering a limited number of sites in this project is to enable the design and implementation of a wide range of participatory and community-based CC adaptation interventions – from policy, soft and concrete measures. It is expected that the impacts of the interventions will be better measured from which lessons learned can be better documented which could inform work in other areas of Vanuatu and in other countries facing comparable vulnerabilities to climate change.

### **2.9.1 Stakeholder engagement plan**

343. A wide range of stakeholders will be involved with V-CAP implementation to meet the specific outcomes of the four project components. Key stakeholders include a range of national government line ministries, civil society organizations (CSOs) including NGOs and Churches, provincial leaders and extension officers, area councils, local communities and their special interest groups.

344. Annex 10 provides a detailed stakeholder’s engagement plan with the various roles to be assigned during the implementation of V-CAP. The PPG team did consult widely in the proposal development phase, however it is expected that additional stakeholders will be identified that will play a key role in project delivery.

345. In addition, it will be vital for V-CAP to develop and deliver a targeted and useful communication program to ensure the engagement of the wider community and additional partners. Innovative approaches will be needed to deliver this program. It is important that this communication program is innovative and delivers materials that are socially appropriate for Vanuatu. The long-term nature of the challenges of climate change need to be emphasized and empowering communities in partnership with governments and other development partners will be a key element in this process.

346. The stakeholder engagement in V-CAP implementation will begin at the Inception Workshop which will be held in Port Vila. The role of the inception workshop will be to ensure that government agencies, communities and development partners have a clear understanding of V-CAP and are able to identify their roles. The inputs of stakeholders into this process will be important. The Inceptions workshop will include detailed discussions on key outputs, indicators, project structure, roles and responsibilities and key milestones. It will seek to identify additional partnerships that may be able to ensure successful project delivery. Dialogues at the Inception Workshop will focus on a process that includes the following steps:

- Who are the key stakeholders (in addition to those already extensively identified)
- What role(s) do they play and what contribution can they make to the project (are they interested in contributing to the project?)
- What capacities are available to assist in supporting the project
- What type of engagement does the project need that they can offer (and if support is needed, what approaches are needed to generate interest in the project)

347. V-CAP will be overseen by the NAB, thus providing representation by key government agencies, VANGO, NGOs and development partners. It is important that updates and communications are regularly provided to the NAB to ensure the engagement of key partners. In particular, Outcome 3 on policy review and capacity development will be an important part element of the focus with NAB members. In addition, each component of the project has its own stakeholder groups which will need to be engaged on an on-going basis.

348. Outcome 1 has a heavy focus on the engagement of communities in the vulnerability assessments and development of climate change adaptation strategies. It will also be vital to engage all key elements within these communities including the chiefly systems, churches and other social organizations. In addition, NGOs working in these locations will have a crucial role to play in supporting the development of adaption solutions that enhance resilience to change. Additionally, it will be vital to ensure V-CAP keeps the six provinces engaged in the delivery of V-CAP and a mechanism needs to be agreed during the Inception Phase. This will be challenging in those locations where the island is remote from the provincial capital, e.g. Torres in Torba Province, however only through mainstreaming will the efforts of V-CAP be able to be scaled up.

349. Outcome 2 will be delivered by VMGD and will build upon their expanding network and partnerships. It is important that key beneficiaries are considered as real partners and are able to ensure that the products provided by communities are able to meet their local needs.

350. Outcome 4 will have a component that seeks to broaden the community development dialogues to engage the private sector with the expectation of development of partnerships between private sector entities and various stakeholders including communities in the promotion of CC resilient livelihood activities. Additionally, partnerships with stakeholders including schools, media agencies and other development partners will ensure the development of a comprehensive education and awareness program.

351. Annex 10 outlines the various role of the various stakeholders during project implementation.

## **2.10 Explain compliance with UNDP Safeguards Policies**

352. The environmental and social screening template has been completed and is attached in Annex 11.

353. At this stage of project design, there are no specific identified activities that are considered to have substantial negative environmental impacts and/or unintended negative social consequences. However, these will need to be monitored over the full life of project implementation to ensure specific issues do not arise.

354. In order to ensure the on-going planning, screening and implementation, the following is proposed:

- All new activity proposals, in particular related to infrastructure development are reviewed and screened by the DEPC to ensure the specific activities are planned to be implemented in a manner to minimize environmental impacts. The PIU will also undertake a review and screening. The results of the environmental screening will be provided to the Project Steering Committee;

- Should an activity be deemed by the process above to be environmentally sensitive, an Environmental Management Plan (EMP) will be developed and approved prior to implementation. The EMP will outline specific activities that must be followed by relevant agencies to limit impacts.
- Should an investment arise through the implementation of V-CAP that is identified as requiring an EIA and/or an EMP, the project will support the EIA process in a manner agreed with the Director of Department of Environment, Conservation and Protection.

355. In relation to Gender and Social inclusion, a Gender and Social Inclusion Strategy (GeSI) has been prepared. This document titled “Integrating gender equality and social inclusion dimensions into adaptation to climate change in Vanuatu. This is attached in Annex 8. This document will be used for guiding implementation of the gender and social dimensions into project delivery.



### 3 Project Results Framework

Title: Adaptation to Climate Change in the Coastal Zone in Vanuatu (V-CAP)

<p>This project will contribute to achieving the following Program Outcome as defined in Sub-Regional Program Document 2013-2017: UNDAF Sub-Regional Program Outcome 4 (UNDAF Outcome 1.1)</p> <ul style="list-style-type: none"> <li>Improved resilience of PICTs, with particular focus on communities, through integrated implementation of sustainable environment management, climate change adaptation/mitigation and disaster risk management</li> <li>By 2017, inclusive economic growth is enhanced, poverty is reduced, sustainable employment is improved and increased, livelihood opportunities and food security are expanded for women, youth and vulnerable groups and social safety nets are enhanced for all citizens.</li> </ul> <p>Sub-Regional Program Outcome 2 (UNDAF Outcome 5.1)</p> <ul style="list-style-type: none"> <li>Regional, national, local and traditional governance systems are strengthened, respecting and upholding human rights, especially women's rights in line with international standards</li> </ul> <p>Vanuatu UNDAF</p> <ul style="list-style-type: none"> <li>Outcome 3.1: Alleviation of poverty and increased inclusive growth, employment and livelihoods with a focus on women and youth. Specific reference to Output 3.1.3: Improved and equitable access to markets, financial and business services for women and youth.</li> </ul>
<p>Sub-Regional Program Outcome Indicators (UNDP Sub-Regional Program Document): Outcome 4</p> <ul style="list-style-type: none"> <li>Share of budget resources earmarked for environmental sustainability, disaster risk management, climate change adaptation and mitigation; share of population with sustainable access to improved water sources and to renewable energy (disaggregated by gender and age); ratio of protected area to maintain biological diversity</li> </ul> <p>Outcome 2</p> <ul style="list-style-type: none"> <li>Number of countries to develop service delivery mechanisms to ensure greater equity and inclusion of most vulnerable in the population (including women, children, disabled and elderly) in the services rendered.</li> </ul>
<p>Primary applicable Key Environment and Sustainable Development Key Result Area: Growth is inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded (Outcome 1). Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented (Output 1.4.)</p>
<p><b>Applicable GEF Strategic Objective and Program:</b> CCA-1: "Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level" CCA-2: "Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level."</p>
<p><b>Applicable GEF Expected Outcomes:</b> <u>Outcome 1.1:</u> Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas <u>Outcome 1.3:</u> Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas <u>Outcome 2.1:</u> Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas</p>
<p><b>Applicable GEF Outcome Indicators:</b> <u>Outcome Indicator 1.1.1:</u> Adaptation actions implemented in national/sub-regional development frameworks (no. and type) <u>Outcome Indicator 1.3.1:</u> Households and communities have more secure access to livelihood assets (Score) – Disaggregated by gender and age <u>Outcome Indicator 2.1.1:</u> Relevant risk information disseminated to stakeholders (Yes/No)</p>

Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<b>Project Objective<sup>22</sup></b>  To improve the resilience of the coastal zone to the impacts of climate change in order to sustain livelihoods, food production and preserve and improve the quality of life in targeted vulnerable areas	<ul style="list-style-type: none"> <li>Number of vulnerable communities/villages/areas with enhanced resilience to climate change through effective planning and action for climate change</li> </ul>	Currently no comprehensive community adaptation plans supported by community adaption actions	30 villages in 8 Local Area councils designing and implementing effective CC adaptation plans to enhance CC resilience	<b>Assumptions:</b> <ul style="list-style-type: none"> <li>Target communities are willing to participate in the process of developing and implementing CC adaption plans</li> <li>Project activities are fully participatory</li> <li>Sufficient political commitment from key stakeholder governments are ensured throughout the life cycle of the project</li> <li>Communities are able to identify and make use of suitable traditional and resilient methods of CC adaption.</li> <li>The government is able to attract high-quality project staff</li> </ul> <b>Risks:</b> <ul style="list-style-type: none"> <li>Communication issues with outer islands interferes with effective planning and implementation</li> <li>Project unable to identify suitable/acceptable support mechanisms for communities</li> <li>High cost of working in outer islands makes interventions uneconomic</li> <li>Unable to attract and retain suitable staff</li> </ul>
	<ul style="list-style-type: none"> <li>Percentage of the population in target sites covered by effective the 24/7 early warning system</li> </ul>	Many communities in V-CAP sites are remote and not able to receive warning	100% of Vanuatu population receives high quality early warning in a timely manner using of the multiple communication lines	
	<ul style="list-style-type: none"> <li>Policies in place to support Climate change adaptation enabling policies and supportive institutions in place</li> </ul>	No approved framework for integrated coastal zone management and limited coastal planning policies to support coastal climate change adaption	Integrated coastal zone management framework incorporating resilience though climate change adaptation supported by appropriate sectoral and cross sectoral policy and legislation	

<sup>22</sup> Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR

Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions	
<b>Component 1: Integrated community approaches to climate change adaptation</b>  1.1. Integrated CC-Adaptation plans mainstreamed in the coastal zone -	<ul style="list-style-type: none"><li>• Development of Community CC-Development Adaption Strategies (CCCADS) at the village level<sup>23</sup> using common indicators across all project sites</li><li>• Community Disaster Committees<sup>24</sup> established and operational with specific plans developed in targeted communities and at Area Council level</li></ul>	<ul style="list-style-type: none"><li>• In most V-CAP target areas communities have not developed community adaptation strategies</li><li>• 12 of 30 villages have Community Disaster Committees</li><li>• 6 disaster management plans have been finalised at community level</li><li>• 0 Area Councils have Community Disaster Plans</li></ul>	<ul style="list-style-type: none"><li>• 30 Community CC-Development Adaption Strategies (CCCADS) at the village level<sup>25</sup> using common indicators across all project sites</li><li>• CDC established and operational in at least 30 communities, 8 Area Councils &amp; 1 District</li><li>• 8 Area Councils with operational Disaster Plans and equipped to respond to enhance resilience to climate related natural disasters</li></ul>	<ul style="list-style-type: none"><li>• Plans developed for all selected communities (30 in total)</li><li>• Community participation in planning process (disaggregated by gender and age)</li><li>• Area Council members elected, including women and youth representatives, and Area Council functioning</li><li>• Minutes of CC / DRM committee meetings</li><li>• CDC's registered with NDMO, VMGD</li><li>• List of representatives selected by each Area Council registered with DLA (disaggregated by gender and age)</li><li>• Formal written plans approved by relevant</li></ul>	<b>Assumptions:</b> <ul style="list-style-type: none"><li>• All target communities are willing to participate in the process of developing and implementing CC adaption plans</li><li>• Communities are able to identify and make use of suitable traditional and resilient methods of CC adaption.</li></ul> <b>Risks:</b> <ul style="list-style-type: none"><li>• Communication issues with outer islands interferes with effective planning and implementation</li><li>• Project unable to identify suitable/acceptable support mechanisms for communities</li><li>• High cost of working in outer islands makes interventions uneconomic</li><li>• Unable to attract and retain suitable staff</li></ul>

<sup>23</sup> A "community" in Vanuatu often includes a number of villages – based on the genealogy of the community and traditional practices

<sup>24</sup> Community Disaster Committees will be re-aligned and mainstreamed with overall community development committee

<sup>25</sup> A "community" in Vanuatu often includes a number of villages – based on the genealogy of the community and traditional practices

Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
			government agencies including PMU, NDMO, DLA in addition to Provinces.	
1.2 Improved climate resilience of coastal areas through integrated approaches	<ul style="list-style-type: none"> <li>1.2.1 : Length of coastline placed under improved integrated coastal management to improve ecosystem-based adaptation</li> </ul>	<ul style="list-style-type: none"> <li>No formalised management plans have been developed and approved for areas</li> <li>Currently a “tabu” areas are developed in “haphazard” manner without systematic measuring of coverage and without long-term management plans or monitoring</li> <li>Some tabu areas do exist for the purpose of managing fish harvesting on a short term basis without long term conservation measures integrated into management</li> <li>Small number of Marine Protected Areas in selected sites (6 in total)</li> </ul>	<ul style="list-style-type: none"> <li>Community Integrated Coastal Zone Management Plans (CICZM Plans) established integrating “kustom tabu” areas to enhance ecosystem resilience food production and livelihood support for local communities in 30 locations</li> <li>Six additional 6 additional Community Conservation Areas (CCAs) to national PA network</li> <li>Tabu areas / CCAs/ MPAs linked together through Area Council ICZM Plans to ensure integration of planning processes</li> <li>Knowledge sharing and integrated development of coastal areas.</li> <li>Community, including women and youth, participating in the monitoring, evaluation and management of</li> </ul>	<ul style="list-style-type: none"> <li>Plans developed for tabu areas and LMMAs using appropriate laws and regulations approved by province and authorities under ICZM framework</li> <li>Participation by communities in planning process (disaggregated by gender and age)</li> <li>Sites registered under national CCA/MPA planning processes</li> <li>Regular monitoring (Reef check type) against baseline to measure change and identify emerging issues</li> <li>Monitoring of implementation of CICZM plans</li> </ul> <p><b>Assumptions:</b></p> <ul style="list-style-type: none"> <li>Island communities able to link traditional practices in “tabu areas” with LMMA approaches to contribute to CC resilience</li> <li>Suitable “soft infrastructure” investments have demonstrable impact on marine ecosystem resilience within project period</li> <li>Communities able to clearly articulate links between upland coastal issues and coastal and marine water quality</li> </ul> <p><b>Risks:</b></p> <ul style="list-style-type: none"> <li>Ridge to reef management approaches not able to demonstrate impact in five year time frame</li> <li>Communities unwilling to expand the practice of “tabu areas”</li> <li>Tabu areas not respected by all community members in surrounding areas</li> <li>Uptake of knowledge is low and resilience not significantly improved</li> <li>Communities unable or unwilling to address water supply issues due to land or ownership disputes.</li> </ul>

Indicators		Baseline	Targets End of Project	Source of verification	Risks and Assumptions
			CICZM Plans in 30 sites • Improve ecosystem resilience and health		
	• 1.2.2 Enhanced resilience of terrestrial coastal areas to minimize erosion, provide clean water resources to both communities and ecosystems enhancing the livelihoods of coastal communities	• Poor catchment management is resulting in high sediment loads, high level of nutrients • Coastal ecosystems are being degraded by poor water quality • Poor sanitation is creating health issues in some coastal communities, particularly for children • Water shortages during climate related events • Loss of food production through disease and pests	• Development of 30 Upland Management CCA Plans (UMCCAP) for coastal catchment with actions to reduce run-off resulting in improved turbidity of rivers, streams and coastal waters and a reduction of nutrient-rich sediment reaching the coastal area • 20 Erosion “hotspots” with action resulting in reduced erosion • Reduction in cases of water borne illnesses in communities affected by improved catchments • Enhanced agricultural productivity • Increased water security for 2,000 people	• Baseline and review surveys of the erosion hotspots in the upland areas of coastal catchments • Water quality monitoring at site level • Health centre records • School attendance records • Agricultural food production surveys • Regular coastal reef monitoring of corals and associated ecosystems • Minutes of community meetings, etc • Regular monitoring against baseline to measure change	
	• 1.2.3 Number of public conveyances climate proofed to provide long-term use by vulnerable coastal communities	• Current public conveyance infrastructure (including roads, bridges, pedestrian walkways, river crossings and walking tracks) in poor and deteriorating condition due to flooding and erosion severely	• 10 pedestrian bridges established • 4 water crossings rehabilitated • 10 km of road rehabilitated • 6 pedestrian walking paths “climate proofed” • Total of 10,000	• Plans for development of infrastructure agreed with authorities and communities with due consideration to public use requirements and patterns, including	<b>Assumptions</b> <ul style="list-style-type: none"> <li>• Public Works will provide resource inputs as per the agreed schedule of works</li> <li>• Communities will contribute labour for infrastructure investments</li> </ul> <b>Risks</b>

Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	<p>limits access to basic services</p> <ul style="list-style-type: none"> <li>• Pedestrian river crossings do not exist resulting in injury and death, especially of children, people who are ill and those with physical disabilities during severe flooding.</li> <li>• Erosion, water and climate related factors making public conveyance infrastructure to vehicles</li> <li>• Limited access to health, education and markets in extreme weather conditions.</li> </ul>	community members with better access to markets, education and health	<p>the specific needs of women, children and people with disabilities</p> <ul style="list-style-type: none"> <li>• Climate proofing of existing conveyance infrastructure (i.e. roads and bridges) and construction of new pedestrian infrastructure (i.e. river crossing and walkways) as per the specifications contained in Section 1.2.3.</li> <li>• Public use surveys show improved school attendance, greater use of health and other services and increased amount of market goods (disaggregated by gender and age)</li> <li>• Village products sold at local outlets resulting in improved family income (disaggregated by gender and age)</li> </ul>	<ul style="list-style-type: none"> <li>• Land issues will arise in areas where access is required</li> <li>• Communities will not maintain infrastructure</li> </ul> <p>New public infrastructure will not be equitably shared by all community members; social problems could development</p>
<b>Outputs supporting Outcome 1</b> <ul style="list-style-type: none"> <li>• 1.1.1 CC adaptation plans, including risk management, preparedness and response plans, formulated in the context of ICM and in relation to assessed site-specific vulnerabilities, subsequently adopted and mainstreamed in planning processes for at least 6 priority vulnerable coastal communities</li> <li>• 1.2.1 Threatened coastal ecosystems and resources such as mangroves, coral reefs, and fisheries rehabilitated to support livelihoods and food production and increase climate resilience</li> <li>• 1.2.2 Coastal areas stabilized through re-vegetation and other 'soft' approaches to complement 'hard' measures</li> </ul>				

Indicators		Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<ul style="list-style-type: none"> <li>1.2.3 Improved resilience through climate proofing of selected public conveyance infrastructure (roads, bridges, etc. implemented by the Public Works Department) in the coastal zone in at least 6 priority vulnerable coastal communities</li> </ul>					
<p><b>Outcome 2:</b></p> <p><b>Information and early warning systems on coastal hazards</b></p> <p>2.1 Reduced exposure to flood-related risks and hazards in the target coastal communities</p>	<ul style="list-style-type: none"> <li>Better quality accuracy and timeliness in weather forecasting, particularly for extreme events such as extreme rainfall events, storm surges, tropical depressions and cyclones informing EWS</li> <li>Strengthened capacity within VMGD to deliver timely climate related information to all communities in Vanuatu</li> </ul>	<ul style="list-style-type: none"> <li>A warning system exists, however it is limited by access to up-to-date information and high quality information.</li> <li>Collection of weather related data is manual, relies of 24/7 staffing and limited during weather related events</li> <li>A warning system exists, however it is limited by access to up-to-date information, distribution networks and capacity of government to delivery timely warnings and information</li> <li>There are no special provisions or considerations regarding the needs of vulnerable groups of people including children, older people and those with a disability</li> </ul>	<ul style="list-style-type: none"> <li>By the end of the project at least 100% of targeted V-CAP communities receiving timely and accurate early warnings of coastal hazards including floods, cyclones and other natural disasters and respond to early warnings and take the appropriate actions following the warning (disaggregated by gender and age)</li> <li>Better quality meteorological forecasting available for all people of Vanuatu</li> <li>Higher quality data available for meteorological forecasting available for all people of Vanuatu</li> <li>Better quality metrological forecasting in Vanuatu, particularly in relation to extreme climate events</li> </ul>	<ul style="list-style-type: none"> <li>Observations and reports from the annual mock drills</li> <li>Delivery of high quality training and full participation by relevant officials</li> <li>Ongoing monitoring and evaluation of plans which actively includes representatives of all community social groups including women.</li> <li>Data from weather stations reported in a timely manner</li> <li>External evaluation of weather data collation</li> <li>Disaster response plans prepared for villages and implemented inclusive of the needs of vulnerable groups in emergency situations</li> </ul>	<p><b>Assumptions:</b></p> <ul style="list-style-type: none"> <li>Appropriate Radio and other related infrastructure, which is the primary baseline project for covering 100% of population continues to operate under extreme conditions</li> <li>NDMO has sufficient capacity and skills to implement the EWS</li> <li>Phone companies are willing to participate and provide services</li> <li>There is sufficient technical capacity and human resources for installation of communication equipment</li> </ul> <p><b>Risks:</b></p> <ul style="list-style-type: none"> <li>High turn-over among key stakeholders in the government and NGO sector during the project implementation results in loss of knowledge and experience</li> <li>Access and communication is difficult with selected sites</li> </ul>
Outputs supporting Outcome 2					



Indicators		Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<ul style="list-style-type: none"> <li>• 2.1.1 Automated system for real time monitoring of climate-related hazards such as coastal flooding, storm surges, sea-level rise designed, installed and maintained; trends in these climate impacts analyzed over time</li> <li>• 2.1.2 Timely release of early warnings against coastal flooding and storm surges through various public media, e.g., radio, internet, TV through applicable public-private partnerships with e.g., with Digicel; TVL – Telecom Vanuatu Ltd; commercial radio and TV stations</li> <li>• 2.1.3 Capacity of 18 VMGD staff in the operation and maintenance of AWS and in the analysis of data strengthened</li> </ul>					
<b>Outcome 3. Climate Change Governance</b>  3.1 Climate change adaptation enabling policies and supportive institutions in place	<ul style="list-style-type: none"> <li>• Number of sectoral policies, plans and strategies explicitly recognising approaches to climate change adaption and a reform agenda adopted</li> </ul>	<ul style="list-style-type: none"> <li>• Currently there are limited number of national sectoral policies, plans and strategies that incorporate climate change adaptation</li> <li>• Currently there is no strategic framework for developing reform agenda for key sectors</li> <li>• NICZM Framework is draft form (2010)</li> <li>• Currently there are no written guidelines concerning incorporation of gender and social inclusion in national or sector strategic or business plans regarding climate change</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Reform agenda established to incorporate climate change into key sectors</li> <li>• NICZM Framework is finalised and approved</li> <li>• Revised EIA policy and legislation</li> <li>• 1 additional sectoral policy recognising and incorporating CC inclusive of gender and social inclusion considerations;</li> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Reform agenda agreed by government</li> <li>• Sectoral policies / plans incorporating climate change</li> <li>• Minutes of meetings and discussions</li> <li>• Policy reviews to support integration of CC into sectoral policies / plans</li> </ul>	<b>Assumptions:</b> <ul style="list-style-type: none"> <li>• Line agencies are willing to incorporate cc adaptation into sectoral policies and plans</li> <li>• Sufficient information exists on possible climate scenarios to identify appropriate sectoral responses</li> <li>• Suitable experts can be identified to deliver capacity building programs</li> <li>• Suitable trainees can be identified for capacity building activities at the community level</li> </ul> <b>Risks:</b> <ul style="list-style-type: none"> <li>• Insufficient capacity exists within line agencies to undertake the review</li> <li>• Insufficient and/or suitable policy responses are able to be identified for Vanuatu by key agencies due to lack of institutional capacity</li> </ul>
3.2 Human resources in place at the national, provincial and community levels	<ul style="list-style-type: none"> <li>• Number of trained staff with sufficient resources to implement CC resilience and adaptation at the national, provincial and community levels</li> </ul>	<ul style="list-style-type: none"> <li>• Currently few staff with capacity for integration of CC Adaptation approaches at provincial and community levels</li> </ul>	<ul style="list-style-type: none"> <li>• 60 staff trained and implementing approaches to planning for integration of climate change into local level planning at provincial and community levels (gender-disaggregated data will be presented)</li> </ul>	<ul style="list-style-type: none"> <li>• 60 trainees in training courses with gender and age disaggregated data</li> <li>• 12 Training courses specifically addressing building local level community resilience</li> </ul>	

Indicators		Baseline	Targets End of Project	Source of verification	Risks and Assumptions
				<ul style="list-style-type: none"> <li>• number of communities where training is adopted as part of the cc resilience adaptation practices</li> <li>• Training materials on 6 subjects developed, field tested and modified as required</li> <li>• Reports of training courses</li> </ul>	
<p>Outputs supporting Outcome 3</p> <ul style="list-style-type: none"> <li>• 3.1.1 Legislation and national/sector policies with impacts on climate change adaptation reviewed and a policy reform agenda developed and implemented (e.g., finalization of draft National CC Policy; incorporation of CC into the EIA Policy, and sector policies in forestry, coastal fisheries, agriculture, water and sanitation; localization of existing policies)</li> <li>• 3.2.1 Capacity building of key national and provincial government agencies (DEPC, PWD, Department of Internal Affairs, Departments of Fisheries, Forestry, Water) in areas of compliance and enforcement, monitoring and evaluation and mainstreaming of climate-related policies and regulations</li> <li>• 3.2.2 Communities empowered to deal with climate change impacts in the coastal zone through a supportive Integrated Coastal Zone Management Framework</li> </ul>					
<p>Outcome 4:</p> <p>4.1. Increased awareness and ownership of climate risk reduction processes at the national and local levels.</p>	<ul style="list-style-type: none"> <li>• Practices demonstrated and shared by the project adopted by other parties (replication) and adopted by local communities</li> <li>• Development of 10 sets of training and awareness materials</li> </ul>	<ul style="list-style-type: none"> <li>• Few (if any) villages adopting and using climate change and risk reduction approaches and incorporated into local and provincial level policies, plans and practices</li> <li>• Currently few opportunities for communities and local authorities who are practicing or are interested in practicing innovative CC solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Traditional conservation practices strengthened and implemented in climate change adaptation plans, policies and action (10 sites) to enhance R2R resilience to CC</li> <li>• Increased awareness and action incorporating the role of “natural solutions” natural resource plans and management (10 sites)</li> <li>• Specific exchange programs for field staff,</li> </ul>	<ul style="list-style-type: none"> <li>• Development and implementation of V-CAP communication strategy to increase awareness of key issues in relation to climate change adaption and building resilience</li> <li>Documentation of best practices at the community, provincial and national levels (reports, reviews)</li> <li>• Website for the</li> </ul>	<p><b>Assumptions:</b></p> <ul style="list-style-type: none"> <li>• Suitable mechanism are able to be identified to reach all stakeholders at the community level</li> <li>• Teachers are willing to attend CC in-service courses and use learning materials developed by the project</li> </ul> <p><b>Risks:</b></p> <ul style="list-style-type: none"> <li>• Local communities are not willing to incorporate to incorporated local adaptation responses into plans</li> <li>• Communication materials are not</li> </ul>

Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	<p>to exchange information and learn from one another</p> <ul style="list-style-type: none"> <li>• Links between isolated communities and private sector in CCA are limited</li> </ul>	<p>women's and youth groups on identified climate change resilience topics</p> <ul style="list-style-type: none"> <li>• Increased private sector awareness and identification of opportunities to engage in building CCA resilience.</li> <li>• Approaches demonstrated by V-CAP shared by and adopted by other local communities (replication)</li> <li>• Secondary schools in V-CAP sites undertaking climate awareness and capacity building activities</li> </ul>	<p>project linked to NAB related databases</p> <ul style="list-style-type: none"> <li>• Primary and secondary CC curriculum packages</li> <li>• Project newsletters printed and share with key stakeholders )</li> <li>• Community radio show / packages to share – 12 /</li> <li>• Documentary films produced for each site (6 sites)</li> <li>• Documentary / awareness films produced for key themes ( 4 themes e.g. Reef to Ridge, erosion, MPA, climate change)</li> <li>• Guidelines for incorporating gender and social inclusion in climate change responses developed and used to support Component 3 work</li> <li>• Development of 10 sets of training and awareness materials on approaches to climate change adaption and EWS</li> </ul>	<p>able to reach target communities</p>

Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Outputs supporting Outcome 4				
<ul style="list-style-type: none"> <li>• 4.1.1 Best practices are captured, documented, and distributed to all local and national stakeholders and shared globally in appropriate mechanisms (development, populating and maintenance of national website for CC) through the NAB (National Advisory Board)</li> <li>• 4.1.2 Awareness, training and education programs developed and implemented for e.g. schools, households and the private sector; translated into Bislama and French as applicable and working with ongoing initiatives</li> </ul>				

## 4 Total budget and workplan

<b>Award ID:</b>	00082063	<b>Project ID(s):</b>	00091141
<b>Award Title:</b>	PIMS 4866 FSP LDCF: Adaptation to Climate Change in the Coastal Zone in Vanuatu		
<b>Business Unit:</b>	FJI10		
<b>Project Title:</b>	Adaptation to Climate Change in the Coastal Zone in Vanuatu		
<b>PIMS no.</b>	4866		
<b>Implementing Partner (Executing Agency)</b>	Ministry for Climate Change Adaptation, Meteorology, Geo-hazards, Environment, Energy and Disaster Management		

Outcome	Implementing Agent	Fund ID	Donor	UNDP B/L	UNDP B/L Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	Note
<b>Outcome 1</b> Integrated CC-Adaptation plans mainstreamed in the coastal zoneImproved climate resilience of coastal areas through integrated approaches	Department of Local Authorities / Department of Fisheries / Department of Environment, Conservation and Protection / PWD	62160	LDCF	71200	International Consultants	319,300	255,300	54,500	25,500	14,000	668,600	1A
				71300	Local Consultants	369,250	368,750	302,000	189,000	101,400	1,330,400	1B
				71600	Travel	81,900	72,450	62,550	41,550	43,650	302,100	1C
				72100	Contractual Services - Companies	650,440	602,440	400,960	385,960	71,000	2,110,800	1D
				72200	Equipment & Furniture	53,940	53,940	53,940	53,940	53,940	269,700	1E
				72800	Information Technology Equipment	4,686	4,686	4,686	4,686	4,686	23,430	1E
				72500	Supplies	9,486	9,486	9,486	9,486	9,486	47,430	1E
				73400	Rental & Maint of Equip	72,760	19,560	20,760	18,600	19,800	151,480	1F
				74200	Audiovisual & Printing	13,700	22,700	41,610	24,910	7,700	110,620	1G
				72100	Contractual Services - Companies	130,800	130,800	130,800	130,800	130,800	654,000	1H

				74500	Miscellaneous	-	-	-	9,000	6,000	15,000	1H
				75700	Training, Workshop & Conference	64,248	63,248	72,248	63,248	53,448	316,440	1I
				<b>SUBTOTAL GEF OUTCOME 1</b>		<b>1,770,510</b>	<b>1,603,360</b>	<b>1,153,540</b>	<b>956,680</b>	<b>515,910</b>	<b>6,000,000</b>	
<b>Outcome 2</b> Reduced exposure to flood-related risks and hazards in the target coastal communities	VMDG	62160	LDCF	71200	International Consultants	19,000	64,000	57,000	7,000	-	147,000	2A
				71300	National Consultants	24,000	24,000	24,000	12,000	-	84,000	2B
				71600	Travel	4,200	9,000	9,000	2,400	-	24,600	2C
				72200	Equipment & Furniture	673,400	1,000	1,000	1,000	-	676,400	2D
				72800	Information Technology Equipment	1,000	1,000	1,000	-	-	3,000	2D
				72500	Supplies	1,000	1,000	1,000	1,000	-	4,000	2D
				73400	Rental & Maint of Equip	1,500	1,500	1,500	1,500	-	6,000	2E
				75700	Training, Workshop & Conference	10,000	5,000	-	40,000	-	55,000	2F
				<b>SUBTOTAL GEF OUTCOME 2</b>		<b>734,100</b>	<b>106,500</b>	<b>94,500</b>	<b>64,900</b>	<b>-</b>	<b>1,000,000</b>	
<b>Outcome 3.</b> Climate Change Governance	PMU / NAB	62161	LDCF	71200	International Consultants	56,800	12,000	-	-	-	68,800	3A
				71300	Local Consultants	32,500	51,250	20,000	3,750	1,250	108,750	3B
				71600	Travel	8,300	10,500	6,500	4,000	3,000	32,300	3C
				72800	Information Technology Equipment	340	340	340	340	340	1,700	3D
				72500	Supplies	710	710	710	710	710	3,550	3D

				74200	Audiovisual & Printing	6,975	6,975	5,975	-	4,975	24,900	3E
				74500	Miscellaneous	400	400	400	400	400	2,000	3F
				75700	Training, Workshop & Conference	10,000	16,500	16,000	9,500	6,000	58,000	3G
				<b>SUBTOTAL GEF OUTCOME 3.1</b>		<b>116,025</b>	<b>98,675</b>	<b>49,925</b>	<b>18,700</b>	<b>16,675</b>	<b>300,000</b>	
<b>Outcome 4</b> Increased awareness and ownership of climate risk reduction	NAB /PIU	62160	LDCF	71200	International Consultants	26,800	-	13,400	-	-	40,200	4A
				71300	Local Consultants	18,000	18,000	18,000	18,000	18,000	90,000	4B
				71600	Travel	6,000	5,300	4,200	3,500	2,900	21,900	4C
				72400	Communication and Audio visual equipments	2,400	2,400	2,400	2,400	2,400	12,000	4D
				72200	Equipment & Furniture	1,840	1,840	1,840	1,840	1,840	9,200	4E
				72800	Information Technology Equipment	700	700	700	700	700	3,500	4E
				72500	Supplies	400	400	400	-	-	1,200	4E
				73400	Rental & Maint of Equip	2,400	2,400	2,400	2,400	2,400	12,000	4F
				72200	Equipment & Furniture	3,300	3,300	3,300	3,300	3,300	16,500	4F
				74200	Audiovisual & Printing	8,000	12,000	14,000	14,000	16,000	64,000	4G
				74500	Miscellaneous	15,000	5,000	5,000	5,000	5,000	35,000	4H
				75700	Training, Workshop & Conference	8,900	9,800	8,900	8,900	8,000	44,500	4J
				<b>SUBTOTAL GEF OUTCOME 4</b>		<b>93,740</b>	<b>61,140</b>	<b>74,540</b>	<b>60,040</b>	<b>60,540</b>	<b>350,000</b>	



Project Management costs	PIU/UNDP	62160	LDCF	71200	International Consultants	18,000	18,000	4,500	4,500	-	45,000	PM A
				71300	Local Consultants	25,200	25,200	25,200	25,200	25,200	126,000	PM B
				71600	Travel	4,600	4,600	4,600	4,600	4,600	23,000	PM C
				74100	Professional Services	15,000	15,000	15,000	15,000	15,000	75,000	PM D
				72400	Communication and Audio visual equipments	4,800	4,800	4,800	4,800	4,800	24,000	PM E
				72500	Supplies	1,200	1,200	1,200	1,200	1,200	6,000	PM E
				72800	Information Technology Equipment	1,740	1,740	1,740	1,740	1,740	8,700	PM E
				72200	Equipment & Furniture	2,280	2,280	2,280	2,280	2,280	11,400	PM E
				74500	UNDP DPC	8,487	8,487	5,658	2,829	2,829	28,290	PM F
				75700	Training, Workshop and Conference	6,522	6,522	6,522	6,522	6,522	32,610	PM G
				SUBTOTAL for PIU / management costs		87,829	87,829	71,500	68,671	64,171	380,000	
				Project Total (GEF)					2,802,204	1,957,504	1,444,005	1,168,991

Summary of funds	Fund	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Amount Year 5	TOTAL
	GEF	2,802,204	1,957,504	1,444,005	1,168,991	657,296	8,030,000
	<b>TOTAL</b>	2,802,204	1,957,504	1,444,005	1,168,991	657,296	8,030,000

## 4.1 Budget notes

Note	Description of cost item
1A	<ul style="list-style-type: none"> <li>Community adaptation planning Specialist for 27 months (1.1)</li> <li>International technical specialist – 30 months (1.2.1)</li> <li>International coastal zone management planning expert – 50 days (1.2.1)</li> <li>Upland adaptation specialist (International) -100 days (1.2.2)</li> <li>Water resources supply Consultant -50 days (1.2.2)</li> <li>Agriculture extension specialist consultant -50 days (1.2.2)</li> <li>Forestry Specialist -50 days (1.2.2)</li> <li>Infrastructure specialist – 80 days (1.2.3)</li> </ul>
1B	<ul style="list-style-type: none"> <li>Project Manager - 60 months</li> <li>CC Resilience Specialist - 48 months</li> <li>M&amp;E, Planning and Social Inclusion - 60 months</li> <li>Component Technical Coordinator based in DLA - 48 months</li> <li>Monitoring and evaluation - 60 months</li> <li>Technical specialist - VNA and CCA planning - 15 months (1.1.1)</li> <li>CC Field Officer - 6 sites 48 months / site (288 total) (1.1.1, 1.2.1, 1.2.2, 1.2.3)</li> <li>CC Fisheries and coastal Planning specialist - DOF – 36 months (1.2.1)</li> <li>ICZM Technical Advisor Consultant – DEPC- 16 months (1.2.1)</li> <li>Component Technical Coordinator Upland catchment - 36 months (1.2.2)</li> <li>Water resources supply Consultant - 100 days – (1.2.2)</li> <li>Agriculture extension specialist consultant - 100 days (1.2.2)</li> <li>Forestry Specialist - 50 days (1.2.2)</li> <li>Upland erosion specialist 150 days (1.2.2)</li> <li>Infrastructure specialist – 200 days (1.2.3)</li> </ul>
1C	<ul style="list-style-type: none"> <li>Field missions for national consultants – 150 missions @ \$755 (average)</li> <li>Field missions for international consultants – 100 missions @ \$ 755 (average)</li> <li>Field missions for national counterparts - 150 missions @ \$ 755 (average)</li> </ul>
1D	<ul style="list-style-type: none"> <li>Project mid-term review - \$15,000 (1.1.1)</li> <li>Final Reviews - \$20,000 (1.1.1)</li> <li>Support to NGO Planning initiatives 2 contracts @ \$50,000 = \$100,000 (1.1.1)</li> <li>COTS management contracts – community contracts – various - \$ 15,000 (1.2.1)</li> <li>Baseline field survey 1.2.1 (D O Fisheries) - \$48,000</li> <li>Repeat baseline field survey 1.2.1 (D O Fisheries) - \$48,000</li> <li>Support to NGO initiatives to implement (1.2.2) 4 contracts @ \$50,000 = \$200,000</li> <li>Support to infrastructure construction as outlined in project document (1.2.3) - \$1,664,800</li> </ul>
1E	<p>Support to Area Council and field officers</p> <ul style="list-style-type: none"> <li>Climate proofing existing area council offices \$ 30,000</li> <li>Office equipment - Area Council \$15,300</li> <li>Office supplies \$7,200</li> <li>12 Laptops @ \$1,500 = \$ 18,000</li> <li>6 Generator, printer and LCD @ \$3,000 = \$ 18,000</li> <li>Office furniture - Filing Cabinet, desk and Chair (7 sets ) = 8,400</li> </ul> <p>Other</p> <ul style="list-style-type: none"> <li>Office supplies / operations 5@ \$7,200 /year= \$36,000 (1.2.1)</li> <li>Laptops - Marine Coordinator \$1,830</li> <li>Office supplies (1.2.2) operations 5@ \$3,600 /year= \$18,000</li> <li>Laptop - Component officers (1.2.2) 2@1,800 = 3,600</li> <li>Nursery establishment 6 area councils with nurseries @ \$3,000 = \$18,000</li> <li>Water supply/ WASH - 6 area councils with nurseries @ \$30,000 = \$180,000</li> <li>Office operations (1.2.3) = \$240 / month for 6 months = \$1,440</li> </ul>

1F	<ul style="list-style-type: none"> <li>Field travel 1.1. – vehicle hire \$ 3,600</li> <li>1.2.1 Boats purchase (Torres and S Malekula) 2 boats @ \$15,000 = \$30,000</li> <li>1.2.1 Boat fuel - \$400 /month for 12 months for 5 years (Torres and S Malekula)= 2@\$24,000 = \$48,000</li> <li>1.2.1 Boat rental \$1,200 / year for 5 years= \$6,000 00 for 5 sites ( Epi, Santo, Pentecost, Aniwa, Tafea) = \$30,000 - Boat Rental</li> <li>1.2.1 Pentecost – car rental \$5,000</li> <li>1.2.2 3 Units Quad Bike - (Epi, Santo, Pentecost) 3@\$5,500</li> <li>1.2.2 Fuel - quad bike (Epi, Santo, Pentecost) 3@40/month@ 4 -5 years = \$5,880</li> </ul>
1G	<ul style="list-style-type: none"> <li>1.1.1 Knowledge management materials – coastal - 4 sets @2,700 = \$10,800</li> <li>1.2.1 Knowledge management materials - upland - 4 sets @5,000 = \$20,000</li> <li>1.2.2 Extension materials on nursery management - 2 sets @9,000 = \$18,000</li> <li>1.2.2 Extension materials on upland management - 2 sets @9,000 = \$18,000</li> <li>1.2.2 Extension materials on WASH - 2 sets @9,910 = \$19,820</li> <li>1.2.2 Extension materials on agriculture - 2 sets @6,000 = \$24,000</li> <li>.</li> </ul>
1H	<ul style="list-style-type: none"> <li>Miscellaneous expenses - various stakeholder engagement meetings - 15,000</li> <li>Contribution to implementation of CCC ADS – co-financing Area council - CCC ADS – 6 sites @\$20,000 = \$120,000</li> <li>Baseline uplands survey 6 sites @\$2,500 / site = \$15,000</li> <li>Repeat baseline uplands survey 6 sites @\$2,500 / site = \$15,000</li> <li>Support Area Council implementation of Upland Management CCA Plans = 6 sites@ \$15,000 total = \$90,000 1.21. Support to Sea Star removal programs 6 sites @\$5,000 = 30,000</li> <li>Installation of Fish Aggregating device installation 6 sites @\$10,000 = 60,000</li> <li>Provision on monitoring equipment to community 6 sites @ \$2,000 = 12,000</li> <li>Installation of signs, boundary markers, etc. 6 sites @ \$1,000 = 6,000</li> <li>Support to implementation of ICZMP – micro- grant 12 @ \$2,000= 24,000</li> <li>Support to erosion control measures as per plan \$2,000 / site/ year = \$72,000</li> <li>Establishment of nursery – 10 sites / province @ 6 provinces @ \$1,500 /site= 90,000</li> <li>Provision of water storage / WASH measures \$18,000 / site @ 6 sites = \$108,000</li> <li>Provision on monitoring equipment to community - 6 sites @ \$2,000 = 12,000</li> </ul>
1I	<ul style="list-style-type: none"> <li>1.1.1. Annual Provincial review 5 review @ \$3,000 = \$ 15,000</li> <li>1.1.1 Various training / awareness - 2 trainings / site / for 4 years = 24@\$1,000 = \$24,000</li> <li>1.2.1 Training - Development ICZM CC Plan – Various 6 sites@\$2,000= \$12,000</li> <li>1.2.1 Training - Community Marine monitoring training 6 sites@\$2,040= \$12,240</li> <li>1.2.1 Bi-Annual National Review 3 meeting @ \$5,000 = \$15,000 (DOF and won smol bag)</li> <li>1.2.1 4 National level training / awareness - @\$4,800 = \$19,200</li> <li>1.2.2 Agriculture climate proof cropping - community training 20 community training @6 sites @\$200 / training = \$ 24,000</li> <li>1.2.2 Nursery operation and upland forestry - community training 20 community training @6 sites @\$200 / training = \$ 24,000</li> <li>1.2.2 Agriculture climate proof cropping - community training 20 community training @6 sites @\$200 / training = \$ 24,000</li> <li>1.2.2 WASH training - community training 20 community training @6 sites @\$500 / training = \$ 60,000</li> <li>1.2.2 Annual component review with provincial government \$500/site@6 sites @5 years= \$15,000</li> <li>1.2.2 Additional training as identified 10 training / site @\$500 = \$5,000</li> <li>1.2.3 RTC - Local bridge construction techniques - 3 courses @\$4,000 = \$12,000</li> <li>1.2.3 Other field training walkway construction techniques - 3 courses @\$4,000 = \$12,000</li> <li>1.2.3 Road- Local maintenance techniques - 3 courses @\$4,000 = \$12,000</li> <li>1.2.3 Various short training - public conveyance maintenance - \$5,000 / site= \$30,000</li> </ul>
2A	<ul style="list-style-type: none"> <li>International TA - AWS Overall System Implementation - 60 days of System Design, Implementation and Validation</li> <li>AWS Installation Technician - 70 days of Technical Installation for 7 sites</li> </ul>

	<ul style="list-style-type: none"> <li>Warning Dissemination System Engineer - 100 days of System Design, Implementation and Validation</li> </ul>
2B	<ul style="list-style-type: none"> <li>Component 2 – technical coordinator – 42 months</li> </ul>
2C	<ul style="list-style-type: none"> <li>Travel for installation of AWS and WS – various – 6 provinces @2 missions @2 persons = \$24,600</li> </ul>
2D	<ul style="list-style-type: none"> <li>AWS - Airport Sites – 2 @ \$150,000 = \$300,000</li> <li>AWS - Remote Islands Sites 5 @ \$30,000 = \$150,000</li> <li>Global Real-Time Transmission System 7 sets @ \$10,000 = \$ 70,000</li> <li>Centralized Weather Data Management System 1 set @ \$20,000 = \$20,000</li> <li>Weather Forecast Data Centre Equipment 1 set @ \$30,000 = \$30,000</li> <li>Climate Division Data Analysis Equipment 1 set @ \$30,000 = \$30,000</li> <li>Observation Sites WDS Equipment 5 sets @ \$5,500 = \$27,500</li> <li>Provincial Office WDS Equipment 6 sets @ \$5,500 = \$33,000</li> <li>Airport Office WDS Equipment 2 @ \$5,000 = \$10,000</li> <li>Messaging Broadcast System Additional Software 1 @ \$ 3,800 = \$3,800</li> <li>HF Alerting System 7 @ \$300 = \$ 2,100</li> <li>Office Supplies for Management Team 4 years @ \$1,000 = \$4,000</li> <li>IT Equipment for Management Team – 2 laptop+ 1 printer = \$3,000</li> </ul>
2E	<ul style="list-style-type: none"> <li>Car rental and petrol for 4 years @ \$1,500 = \$6,000</li> </ul>
2F	<ul style="list-style-type: none"> <li>Installation and maintenance training - 2 training @ \$10,000 = \$20,000</li> <li>Training on the use of Climate and Weather Forecast Data Management System Training of weather forecast team and climate team – 2 training @ \$5,000 = \$10,000</li> <li>Training on the use of Warning Dissemination System - Training of NDMO and VMGD staff – 1 training @ \$5,000 = \$5,000</li> <li>2 Mock drill exercises @ \$ 10,000 = \$20,000</li> </ul>
3A	<ul style="list-style-type: none"> <li>Climate and agriculture policy specialist - 30 days</li> <li>ICZM and CC Policy Expert - 30 days</li> <li>EIA Policy review specialist - 20 days</li> <li>Training and capacity development expert (International) – 40 days</li> </ul>
3B	<ul style="list-style-type: none"> <li>National Climate change policy experts -ICZM 60 days</li> <li>National Climate change policy expert - Agriculture 60 days</li> <li>National Climate change policy experts - various 60 days</li> <li>Training coordinator - 36 months</li> <li>Training specialist – 75 days</li> </ul>
3C	<ul style="list-style-type: none"> <li>Local Travel – various = \$8300</li> <li>International travel 6 @ \$4,000 = \$24,000</li> </ul>
3D	<ul style="list-style-type: none"> <li>Office supplies 4 years @ \$600/ year = \$ 2,400</li> <li>Laptops 1 @ \$1,700 = \$1,700</li> <li>Desk and Chair 1 @ \$650 = \$650</li> <li>Filing Cabinet 1 @ \$500 = \$500</li> </ul>
3E	<ul style="list-style-type: none"> <li>Knowledge management materials 4 @ \$ 4,975 = \$ 19,900</li> <li>Policy - knowledge materials - training materials 5 sets materials @ \$1,000 = \$5,000</li> </ul>
3F	<ul style="list-style-type: none"> <li>National Advisory Board Meetings 4/ year for 5years = \$2,000</li> </ul>
3G	<ul style="list-style-type: none"> <li>National sectoral policy dialogues - support to 3 policy dialogues @ \$4,000= \$12,000</li> <li>Various policy related training / awareness - national 1/ year @ \$ = \$15,000</li> <li>Training courses for sectoral agencies– links to provinces 10 course @ \$3,000 = \$30,000</li> <li>Student training program - 2 high schools @ \$ 500 = \$1,000</li> </ul>
4A	<ul style="list-style-type: none"> <li>Knowledge management specialist (International) – 60 days</li> </ul>
4B	<ul style="list-style-type: none"> <li>Communications officer – 60 months</li> </ul>
4C	<ul style="list-style-type: none"> <li>Baseline survey (2 officers) Field missions 14 @ est \$900 = est \$12,900</li> <li>Travel - International - related CC dialogues 3 @ \$3,000 = \$9,000</li> </ul>

4D	<ul style="list-style-type: none"> <li>Website maintenance 60 months @ \$200/month = \$12,000</li> </ul>
4E	<ul style="list-style-type: none"> <li>Office supplies 6-0 months @ \$20 / month @ \$1,200</li> <li>Laptops (year 1 and year 3) 2@ \$1,750 = \$3,500</li> <li>Camera / video camera / various – 2 units @ 2,000 = \$4,000</li> <li>Printers/scanner/copier - various – 2 units @ 2,000 = \$4,000</li> <li>Desk and Chair - 1 set @ 700 = \$ 700</li> <li>Filing Cabinet - 1 set @ 500 = \$ 500</li> </ul>
4F	<ul style="list-style-type: none"> <li>Vehicle Purchase - 1 small car @ \$16,500 = \$16,500</li> <li>Vehicle operational cost 60 months @ \$200/ month = \$12,000</li> </ul>
4G	<ul style="list-style-type: none"> <li>Documentation of adaption approaches 2 per 6 sites @ \$2,000 = \$ 24,000</li> <li>Knowledge management materials - 5 sets @ \$ 8,000 = \$ 40,000</li> <li>- - -</li> </ul>
4H	<ul style="list-style-type: none"> <li>Inception workshop - \$ 15,000</li> <li>National Steering Committee - Annual review workshop - 4 years @ \$ 5,000 = \$20,000</li> </ul>
4J	<ul style="list-style-type: none"> <li>Annual private sector dialogue 5 @ \$2,000 = \$ 10,000</li> <li>Various training / awareness - national 5 @ \$2,000 = \$ 10,000</li> <li>Schools training program 5 schools @ \$900 = 4,500</li> <li>Various training / awareness - national - 8 @ \$2,500 = \$20,000</li> </ul>
PM A	<ul style="list-style-type: none"> <li>International Technical Specialist 15% ITS @ 36 months</li> </ul>
PM B	<ul style="list-style-type: none"> <li>Project Manager - 30 % of full-time for 5 years</li> <li>Finance and admin Officer - full time for 5 years</li> </ul>
PM C	<ul style="list-style-type: none"> <li>Field travel - \$23,000 (estimated 30 missions)</li> </ul>
PMD	<ul style="list-style-type: none"> <li>Audit for 5 years @ \$15,000/ year = \$75,000</li> </ul>
PM E	<ul style="list-style-type: none"> <li>Office supplies - 60 months @\$100 / month = \$ 6,000</li> <li>Monthly utilities - 60 months @\$200 / month = \$ 12,000</li> <li>Laptops 6 laptop @ \$1,450 = \$ 8,700</li> <li>Printers/scanner/copier / canera 2@ \$1,900 = \$ 3,800</li> <li>Desk and Chair - 7 sets @ \$500 = \$ 3,500</li> <li>Filing Cabinet – 5 @ \$500 = \$ 2,500</li> <li>General office furnishing, boards, etc. various @ 1,600 = \$1,600</li> <li>Telephone - 60 months @\$100 / month = \$ 6,000</li> <li>Internet - 60 months @\$100 / month = \$ 6,000</li> </ul>
PM F	<ul style="list-style-type: none"> <li>Project Direct costs – Estimated costs of DPS requested by the implementing partners to UNDP for executing services as indicated in TBWP for recruitment of consultants, financial and travel services, and procuring equipment. In accordance with GEF Council requirements, the costs of these services will be part of the executing entity's Project Management Cost allocation identified in the project budget. DPS costs would be charged at the end of each year based on the UNDP Universal Pricelist (UPL) or the actual corresponding service cost. The amounts here are estimations based on the services indicated, however as part of annual project operational planning the DPS to be requested during the calendar year would be defined and the amount included in the yearly project management budgets and would be charged based on actual services provided at the end of that year. Total =\$28,290</li> </ul>
PM G	<ul style="list-style-type: none"> <li>Support for provincial attendance NAB / PAG meting 5 years @ \$ 6,522 = \$32,610</li> </ul>

## 5 Management Arrangements

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

### 5.1 Project Management Structure and Responsibilities

357. The information below presents a brief description of the roles and responsibilities of the entities involved in V-CAP implementation. The project organization structure is presented at the end of the section.

358. **Implementing Partner (IP).** At the national level, the Ministry for Climate Change Adaptation, Meteorology, Geo-hazards, Environment, Energy and Disaster Management (MCCAMGEEDM) will act as the implementing partner (Project Executive). MCCAMGEEDM has assigned the Project Management Unit (PMU- a functional unit within the structure MCCAMGEEDM) with the role to oversee implementation of donor projects) to oversee implementation of the V-CAP. Based on a standard NIM modality MCCAMGEEDM will be responsible for the overall project and reporting to UNDP Fiji Multi-Country Office. The MCCAMGEEDM will establish a Project Implementation Unit (PIU) in Port Vila with a full-time V-CAP team, including a National Project Manager and other core project staff as outlined in the following sections. The PIU will liaise with Responsible Parties to the project and other stakeholders to support the implementation of the four Components of the project. The Project Executive (MCCAMGEEDM) will appoint the National Project Director (NPD). The NPD will be supported by the National Project Manager within the PIU.

359. **Responsible Party.** The MCCAMGEEDM will designate a number of responsible parties to implement various Components of V-CAP: The Department of Local Authorities (DLA) within the Ministry of Interior (Mol) will be the Responsible Party for Outcome 1 in partnership with other line agencies; the Vanuatu Meteorology and Geohazard Department will be the Responsible Party for Outcome 2. The NAB supported by the PMU will be responsible for Component 3 and the PIU will be responsible for implementing Component 4.

360. An MOU will be developed outlining specific responsibilities with the key agencies involved in implementation. This MOU will include specific outputs, budgets, indicators and an outline M & E framework.

361. **Project Board (PB).** The PB is responsible for making management decisions for a project in particular when strategic guidance and decisions are required. The PB plays a critical role in project monitoring and evaluation by assuring quality of the project's processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the National Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Workplan, the PB can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans. The specific Terms of Reference for the Project Board are attached in [Annex 12](#).

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

- **An Executive:** individual representing the project ownership to chair the group. This will be a most senior official from the ministerial level MCCAMGEEDM, Vanuatu.
- **Senior Supplier:** individual or group representing the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The

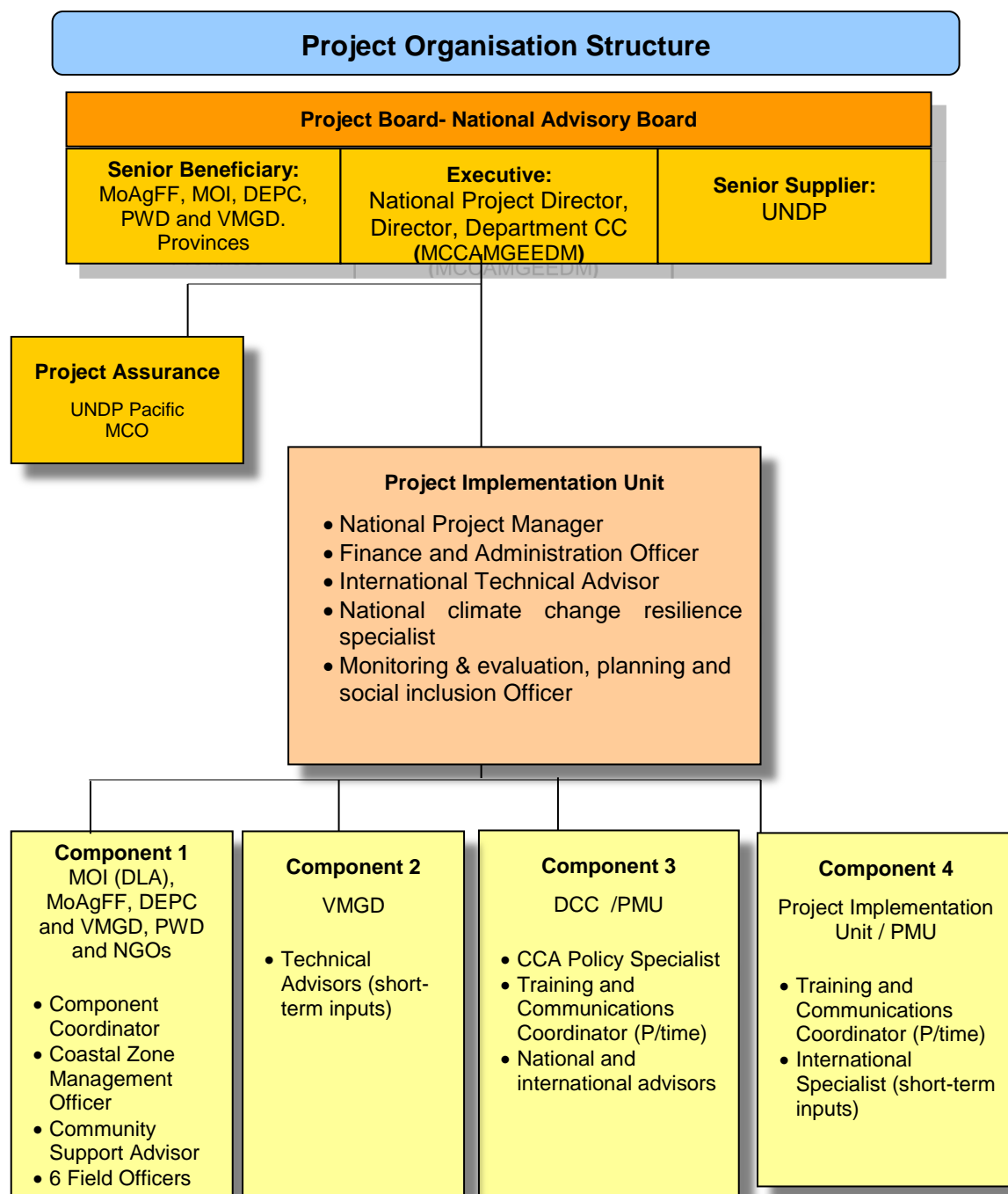
Senior Supplier's primary function within the PB is to provide guidance regarding the technical feasibility of the project. This will be a Representative from UNDP that is held accountable for fiduciary oversight of LDCF resources. In this initiative the UNDP Deputy Resident Representative based in Suva and/or his/her representative will represent UNDP.

- **Senior Beneficiary:** individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the PB is to ensure the realization of project results from the perspective of project beneficiaries. Key parties to this groups will be a high level representative of MOI who is responsible for provincial administrations, MoAgFF, DEPC and VMGD.

363. **Project Advisory Group (PAG):** The Project Board will be guided by a **Project Advisory Group which is essentially the NAB**. The Advisory Group will consist of key relevant national stakeholders from the NAB including the Department of Local Authorities, Departments of Agriculture, Fisheries and Forestry, DEPC, VMGD and NDMO. In addition, the Ministry of Finance, relevant donors including AusAID, who provide co-financing and support to the project, together with Provincial Government Representative(s) as project partners and beneficiaries. It is also recommended that national representatives from the World Bank funded "Increasing Resilience to Climate Change and Natural Hazards Project" which will be delivery activities synergistically with V-CAP can provide valuable and useful experiences. In addition a representative from both Vanuatu Association of Non-Governmental Organizations (VANGO) and (Vanuatu – Climate Adaptation Network) V-CAN provide linkages into the NGO sector. A Key role for PAG is to identify lessons that are able to be scaled up and delivered in a holistic manner through national government systems and through development partners with the support of VANGO and V-CAN. The Advisory Group will provide information and recommendations to the PB. A Terms of Reference for the Project Advisory Group are provided in Annex 12.

364. **Project Implementation Unit (PIU):** The PIU will be based in Port Vila and be housed with the PMU. It will consist of a National Project Manager, International Senior Technical Advisor, national technical staff and finance/administrative assistant. The PIU will amongst other tasks, i) develop Standard Operating Procedures for project implementation, ii) develop Quarterly and Annual Workplan and Budgets, iii) provide financial and administrative management support, iv) prepare Quarterly and Annual Financial and Technical Progress Reports to be submitted to the DoE, and v) ensure compliance with applicable UNDP/GEF/LDCF/Government rules and regulations.





#### Project implementation technical support

365. **The proposed staffing is outlined below:**

- **National Project Manager:** The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Manager's prime responsibility is to ensure that the project produces the results

specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

- **Technical Experts:** The project will recruit the following staff:
  - One International Senior Technical Advisor (2 years + short term monitoring )
  - One full-time National climate change resilience specialist
  - One full-time Monitoring and evaluation, planning and social inclusion Officer
  - One full-time Finance and Administrative Officer
  - Component1:
    - One full-time Coordinator – based with DLA
    - One full-time Community Support Advisor (2 years)
    - One full-time Coastal Zone Management Officer (2 years)
    - Field staff: - 6 Climate Change Field Officers – one per site
    - Technical experts and specialist – national and international (short-term)
  - Component 2:
    - Short-term international technical inputs
  - Component 3:
    - One full time Climate Change Adaptation Policy Specialist – 2 years
    - 50% Part-time Training and Communications Coordinator
    - Short-term national and international technical inputs
  - Component 4:
    - 50% Part-time Training and Communications Coordinator
    - Short-term international technical inputs

366. In addition, specialist consultants will be recruited for specific elements of project delivery. These positions are outline in the budget

367. Terms of References of key project staff and experts are provided in Annex 12.

368. NGOs/CSOs - It is foreseen that NGOs will play an important role in coordination and oversight of specific field-based activities in years 1-3 of project implementation. Please see Term of Reference in Annex 12. These NGOs will have activities already occurring in the V-CAP target provinces, have already established and supported relevant structures within the communities to support their activities and have on-going planned activities.

369. *Audit arrangements:* Audits will be conducted in accordance with the UNDP NIM Audit policies and procedures, and based on UN Harmonized Approach to Cash Transfer (HACT) policy framework. Annual audit of the financial statements relating to the status of UNDP (including GEF) funds will be undertaken according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by a special and certified audit firm. UNDP will be responsible for making audit arrangements for the project in communication with the Project Implementing Partner. UNDP and the project Implementing Partner will provide audit management responses and the Project Manager and Project Implementation Unit (PIU) will address audit recommendations.

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

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

371. For more information, see Budget Notes in Section 4.1. The estimate for UNDP Country Office Support Services presented in Budget Note item PM F will be validated and recorded in a Letter of Agreement before the issuance of DOA.

## 6 Monitoring Framework and Evaluation

372. Monitoring and evaluation will be a critical component of the implementation of V-CAP. The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

373. The M&E framework set out in the Project Results Framework in Part III of this project document is aligned with the AMAT and UNDP M&E frameworks.

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

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

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

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

377. Quarterly:

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

378. **Annually Annual Project Review/Project Implementation Reports (APR/PIR):** This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (1 July -30 June). The APR/PIR combines both UNDP and GEF reporting requirements. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)

- Project outputs delivered per project outcome (annual).
- Provincial comparison of progress of implementation at each field site
- Lesson learned/good practice.
- Annual Work Plan and other expenditure reports
- Risk and adaptive management
- ATLAS QPR

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

380. **Mid-term of project cycle:** V-CAP will undergo an independent Mid-Term Evaluation after 2 years of project implementation which is expected to be in Mid-2016.) The Mid-Term Review will determine progress being made toward the achievement of outcomes, key lessons learnt and will identify course correction if needed. In particular it will focus on the identification of progress of implementation in field sites. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, focused on appropriate delivery mechanisms and overall project management. Rigorous and appropriate project evaluation methodologies, including, but not limited to, randomized control trials, project management assessment, and gender assessments, will be utilized to capture both quantitative and qualitative impacts. Findings of this review will be incorporated as recommendations for enhanced implementation during the remainder of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the mid-term evaluation cycle.

381. **End of Project:** An independent *Terminal Evaluation* will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as modified through the mid-term review process). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. Rigorous and appropriate project evaluation methodologies, including, but not limited to, randomized control trials, project management assessment, and gender assessments, will be utilized to capture both quantitative and qualitative impacts. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the terminal evaluation cycle. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Centre (ERC). The relevant GEF/LDCF Focal Area Tracking Tools will also be completed during the final evaluation.

382. During the **last three months**, the project team will prepare the *Project Terminal Report*. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

383. **Learning and knowledge sharing:** Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation

of similar future projects. There will be a two-way flow of information between this project and other projects of a similar focus.

384. In addition, V-CAP will focus on sharing approaches, information and lessons learnt with the existing networks in Vanuatu to ensure the approaches and lessons learnt in the implementation of V-CAP are able to be adopted by other relevant development partners. This network will include the Vanuatu Climate Adaptation Network (V-CAN).

385. **Audit:** The Project will be audited in accordance with UNDP Financial Regulations and Rules and Audit policies.

## 6.1 Monitoring and evaluation workplan and budget

Type of M&E activity	Responsible Parties	Budget US\$ Excluding project team staff time	Time frame
Inception Workshop and Report	<ul style="list-style-type: none"> <li>Project Manager and M&amp;E, Planning and Social Inclusion Officer</li> <li>PIU</li> <li>UNDP MCO, UNDP GEF</li> </ul>	Indicative cost: \$20,000	Within first 3 months of project start up
Measurement of Means of Verification for Project Progress results of <i>output and implementation</i>	<ul style="list-style-type: none"> <li>Ongoing monitoring by M&amp;E, Planning and Social Inclusion Officer and oversight by Project Manager and International Technical Advisor</li> <li>PIU</li> <li>Implementation teams</li> <li>UNDP GEF RTA/ Project Manager and project team within PIU</li> </ul>	To be determined as part of the Annual Work Plan's preparation. Budgeted: \$30,000	Annually prior to ARR/PIR and to the definition of annual work plans
Annually Annual Project Review/Project Implementation Reports	<ul style="list-style-type: none"> <li>Project Manager</li> <li>International Technical Advisor</li> <li>PIU</li> <li>UNDP MCO</li> <li>UNDP RTA</li> <li>UNDP EEG</li> </ul>	None	Annually
Periodic status/ progress reports	<ul style="list-style-type: none"> <li>Project Manager, and M&amp;E, Planning and Social Inclusion Officer</li> </ul>	None	Quarterly
External Mid-term Evaluation	<ul style="list-style-type: none"> <li>PIU</li> <li>UNDP MCO</li> <li>UNDP GEF</li> <li>External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: \$40,000	At the mid-point of project implementation.
External I Terminal Evaluation	<ul style="list-style-type: none"> <li>PIU</li> <li>UNDP MCO</li> <li>UNDP GEF</li> <li>External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost : \$45,000	At least three months before the end of project implementation
Project Terminal	Project manager and M&E, Planning		At least three

Type of M&E activity	Responsible Parties	Budget US\$ Excluding project team staff time	Time frame
Report	and Social Inclusion Officer UNDP MCO		months before the end of the project
Visits to field sites	<ul style="list-style-type: none"> <li>▪ UNDP MCO</li> <li>▪ UNDP GEF (as appropriate)</li> <li>▪ Government representatives</li> <li>▪ PIU</li> </ul>	For GEF supported projects, paid from IA fees and operational budget	Yearly for UNDP CO; as required by UNDP APRC
Audit	<ul style="list-style-type: none"> <li>▪ UNDP MCO</li> </ul>	US\$75,000 total for 5years at 15,000 per year	Yearly audit threshold = US\$300,000 a year
TOTAL indicative COST  Excluding project team staff time and UNDP staff and travel expenses		US\$ 210,000	

## 6.2 Communications and visibility requirements

386. Full compliance is required with UNDP's Branding Guidelines. These can be accessed at <http://intra.undp.org/coa/branding.shtml>, and specific guidelines on UNDP logo use can be accessed at: <http://intra.undp.org/branding/useOfLogo.html>. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: [http://www.thegef.org/gef/GEF\\_logo](http://www.thegef.org/gef/GEF_logo). The UNDP logo can be accessed at <http://intra.undp.org/coa/branding.shtml>.

387. Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: [http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08\\_Branding\\_the\\_GEF%20final\\_0.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf). Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

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

## 7 Legal Context -

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA [or other appropriate governing agreement] and all CPAP provisions apply to this document.

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

The implementing partner shall:

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

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

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

319. The UNDP Resident Representative in Suva is authorized to effect in writing the following types of revisions to this Project Document, provided that s/he has verified the agreement thereto by the UNDP Regional Centre in the Asia Pacific and is assured that other signatories to the Project Document have no objections to the proposed changes:

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