



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Naoko Ishii
CEO and Chairperson

October 08, 2015

Dear LDCF/SCCF Council Member:

ADB as the Implementing Agency for the project entitled: *Vanuatu: Protecting Urban Areas Against the Impacts of Climate Change in Vanuatu under the Regional: CPDP: Climate Proofing Development in the Pacific*, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with ADB procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by LDCF/SCCF Council in July, 2013 and the proposed project remains consistent with the Instrument and LDCF/SCCF policies and procedures. The attached explanation prepared by ADB satisfactorily details how Council's comments have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.TheGEF.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Naoko Ishii
Chief Executive Officer and Chairperson

Attachment: GEFSEC Project Review Document
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee



GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: Least Developed Countries Fund

For more information about GEF, visit TheGEF.org

PART I: PROJECT INFORMATION

Project Title: Protecting Urban Areas Against the Impacts of Climate Change in Vanuatu			
Country(ies):	Vanuatu	GEF Project ID: ¹	9197
GEF Agency(ies):	ADB (select) (select)	GEF Agency Project ID:	42391-013
Other Executing Partner(s):	Public Works Department (PWD), Ministry of Infrastructure and Public Utilities (MIPU)	Submission Date:	2015-10-08
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>	Corporate Program: SGP <input type="checkbox"/>	
Name of Parent Program	Climate Proofing Development in the Pacific	Agency Fee (\$)	452,000

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in \$)	
			GEF Project Financing	Co-financing
(select) CCA-1 (select)	1.1 Vulnerability of physical assets and natural systems reduced	LDCF	5,176,000	43,830,000
(select) CCA-2 (select)	2.1 Increased awareness of climate change impacts, vulnerability and adaptation	LDCF	49,000	500,000
(select) CCA-2 (select)	2.2 Access to improved climate information and early-warning systems enhanced at regional, national, sub-national and local levels	LDCF	425,000	3,000,000
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
Total project costs			5,650,000	47,330,000

B. PROJECT DESCRIPTION SUMMARY

Project Objective: To reduce vulnerability and increase resilience to climate change hazards in urban areas in Vanuatu						
Project Components/Programs	Financing Type ³	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Confirmed Co-financing
Component 1: Strengthening the climate resilience of infrastructure	Inv	1.1: The urban road infrastructure is climate proofed	1.1.1: 17.45 km of drainage and 25.11 km of urban roads are designed, constructed and managed in a manner resilient to the two-year return period	LDCF	1,370,000	32,000,000

¹ Project ID number remains the same as the assigned PIF number.

² When completing Table A, refer to the excerpts on [GEF 6 Results Frameworks for GETF, LDCF and SCCF](#).

³ Financing type can be either investment or technical assistance.

			flash-flooding.			
Component 1: Strengthening the climate resilience of infrastructure	Inv	1.2: Climate resilience integrated into post- Pam cyclone recovery efforts.	1.2.1: the Efate Ring Road is built back and managed in a manner resilient to climate change.	LDCF	2,680,000	8,230,000
Component 1: Strengthening the climate resilience of infrastructure	TA	1.3: Climate resilient, sustainable urban drainage implemented at urban sub- catchments	1.3.1: Two priority sub- catchments selected; 1.3.2: Two sub- catchment level action plans; 1.3.3: Priority measures to ensure the urban communities can cope with floods are implemented; 1.3.4: Priority off the right-of-way measures to reduce floods are implemented with the participation of the urban communities; 1.3.5: Knowledge management.	LDCF	1,000,000	4,500,000
Component 2: Enabling adaptation through improved decision-making and knowledge development	TA	2.1: Technical assistance provided and capacity developed	2.1.1: Climate Resilient Urban Road Standards/Guidelines; 2.1.2: Port Vila Disaster Risk Management Plan; 2.1.3: A cadre of trained and capable personnel in the potential Asset Operators; 2.1.4: A cadre of trained and capable personnel in the private sector consulting companies who may be involved in future construction/operation/ maintenance of climate vulnerable infrastructure; 2.1.5: Climate resilient building codes and related regulatory support.	LDCF	500,000	2,000,000
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
Subtotal					5,550,000	46,730,000
Project Management Cost (PMC) ⁴				LDCF	100,000	600,000

⁴ For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

Total project costs		5,650,000	47,330,000
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C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (\$)
Recipient Government	Government of Vanuatu	In-kind	3,100,000
GEF Agency	Asian Development Bank (ADF)	Loans	5,000,000
GEF Agency	Asian Development Bank (ADF)	Grants	1,610,000
GEF Agency	Asian Development Bank (ADF)	Loans	1,000,000
GEF Agency	Asian Development Bank (ADB Disaster Response Facility)	Grants	2,810,000
GEF Agency	Asian Development Bank (ADB Disaster Response Facility)	Loans	2,810,000
Donor Agency	Gouvernement of Australia	Grants	26,500,000
Donor Agency	Gouvernement of Australia CFA	Grants	4,500,000
(select)		(select)	
Total Co-financing			47,330,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee^{a)} (b)²	Total (c)=a+b
ADB	LDCF	Vanuatu	Climate Change	(select as applicable)	5,650,000	452,000	6,102,000
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
Total Grant Resources					5,650,000	452,000	6,102,000

a) Refer to the Fee Policy for GEF Partner Agencies

E. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS⁵

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	<i>hectares</i>
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	<i>hectares</i>
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	<i>Number of freshwater basins</i>
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	<i>Percent of fisheries, by volume</i>
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO _{2e} mitigated (include both direct and indirect)	<i>metric tons</i>
5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	<i>metric tons</i>
	Reduction of 1000 tons of Mercury	<i>metric tons</i>
	Phase-out of 303.44 tons of ODP (HCFC)	<i>ODP tons</i>
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	<i>Number of Countries:</i>
	Functional environmental information systems are established to support decision-making in at least 10 countries	<i>Number of Countries:</i>

F. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? No

(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF Trust Fund) in Annex D.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF⁶

⁵ Update the applicable indicators provided at PIF stage. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the [GEF-6 Programming Directions](#), will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

⁶ For questions A.1 –A.7 in Part II, if there are no changes since PIF, no need to respond, please enter “NA” after the respective question.

A.1. *Project Description*. Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area⁷ strategies, with a brief description of expected outcomes and components of the project, 4) [incremental/additional cost reasoning](#) and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and [co-financing](#); 5) [global environmental benefits](#) (GEFTF) and/or [adaptation benefits](#) (LDCF/SCCF); and 6) innovativeness, sustainability and potential for scaling up.

1. GEF approval of the Project concept was on the basis of a GEF Program Framework Document (PFD) rather than a PIF. The PFD covered five projects in three countries and it provided only limited details on each of the individual projects. Accordingly the following sections provide detailed information on this Vanuatu Project.

A1. Project Description

A.1.1 The Climate Change Adaptation Challenge

Vanuatu and its Urban Areas

2. The Republic of Vanuatu comprises approximately 82 small islands stretching over approximately 1,300 kilometres in a broadly north south direction. Vanuatu has a combined land area of 12,336 km² and a maritime exclusive economic zone of 680,000 km². The eight largest islands contribute 87% of the total land area. The population of approximately 234,000 people is spread over 68 inhabited islands. The seven most populated islands, by far, with over 80% of the population are: Efate, Espiritu Santo, Tanna, Malekula, Pentecost, Ambae, and Ambrym (see map in Figure 1). The remaining islands are small and mostly mountainous, although there is a small number of low-lying islands. Vanuatu lies in the Pacific Ocean between latitudes 13° and 21°S and longitudes 166° and 171°E.

3. Administratively, Vanuatu consists of six Provinces and three municipal areas (see map in Figure 1). The three municipalities are Port Vila Municipality (on Efate Island in Shefa Province), Luganville municipality (Sanma Province) and Lenakel Municipality (Tafea Province). The head towns of the other three provinces are Lakatoro (head town of Malampa Province), Sola (Torba province) and Longana (Penama Province). These head towns can be considered ‘urban settings’. There are therefore six urban settings in total on Vanuatu.

4. Efate is the main island in the Shefa Province of Vanuatu and includes the capital Port Vila. Efate is the third largest island covering 899.5 km². Efate is the most populous island with approximately 66,000. Efate consists mostly of steep and mountainous terrain – the highest point is Mount McDonald with a height of 647 meters.

5. Port Vila Municipality is the largest population centre with approximately 44,000 residents. It is also the main commercial centre and the seat of Vanuatu’s government. Recent rapid economic development and rural-urban migration have led to a proliferation of informal settlements in and around Port Vila, and so Port Vila has already grown beyond its originally defined urban boundaries. In 2009, the estimated population of the resulting “Greater Port Vila” area was 58,000 residents. Some studies predict this figure will reach 109,000 by 2025. In addition, a growing number of tourists visit Port Vila and/or transit through the city to different tourism destinations in the country. It is estimated that, at any given time, there are 3,000-4,000 tourists in the city and nearby areas. The tourism sector is the lifeline of the national economy. Hence, urban development and the quality of urban services in Port Vila have significant implications for the tourism-led economic growth and overall development of Vanuatu.

6. Urban development across Vanuatu has been relatively ad hoc. There has been no systematic planning process, at either provincial or municipal/town level. Until recently, the relatively low population densities meant that the challenges facing urban areas were limited. This situation has now started to change, and significant inadequacies have emerged, particularly in drainage, roads infrastructure, sanitation and hygiene services. Although these challenges affect all urban areas, the biggest challenges are in Port Vila, given it has by far the largest and fastest growing

⁷ For biodiversity projects, in addition to explaining the project’s consistency with the biodiversity focal area strategy, objectives and programs, please also describe which [Aichi Target\(s\)](#) the project will directly contribute to achieving.

population. The poor conditions of these services adversely affect public health, economic activities, tourism and the overall quality of life for Port Vila residents and visitors.

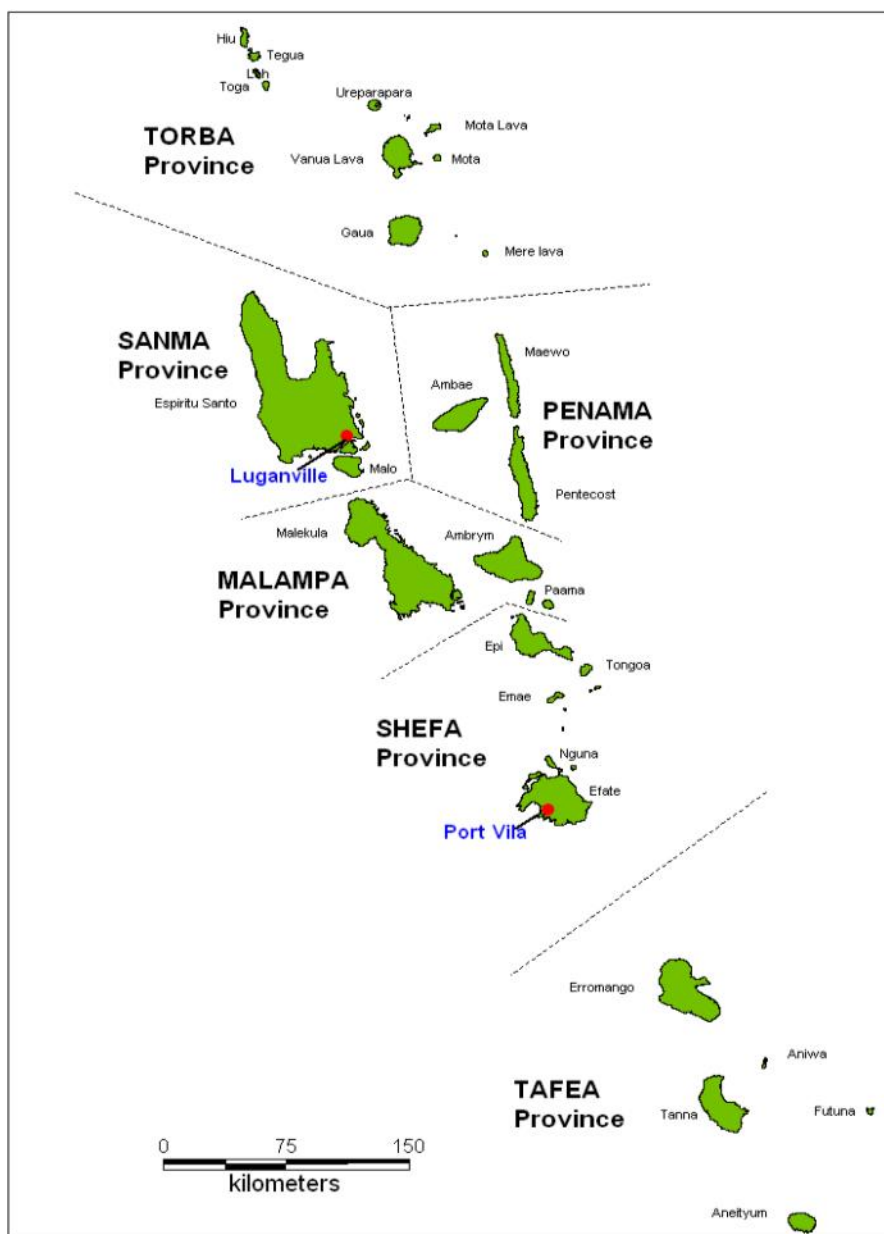


Figure 1: Map of Vanuatu

7. Vanuatu faces a full range of geological and climatic hazards. Geologically, the islands are located in a seismically and volcanically active region and are highly exposed to hazards such as volcanic eruptions, earthquakes, tsunamis, and landslides. Recent geological disasters include the November 1999 Penama earthquake and tsunami that affected about 23,000 people and the 2002 Port Vila earthquake that caused structural and infrastructure damage. The islands are also exposed to climatic hazards such as cyclones, storm surges and coastal and river flooding. Vanuatu's latitude places it in the path of tropical cyclones. Further, it is subject to El Niño and La Niña cycles, which increase the risks, respectively, of droughts and floods. Vanuatu is also subject to climatic variability and climate extremes. Vanuatu is also exposed to coastal and river flooding, coastal erosion, heavy rainfall events and droughts. In March 2015, the Category 5 cyclone Pam, with winds of up to 250 kmh, caused several deaths and created widespread damage across Vanuatu, causing great damage to Port Vila (see Box 1)[Endnote: The Financial newspaper

(<http://finchannel.com/>), 25 March 2015. At the time of writing, details on the amount of damage and deaths was not available]. This was the most violent and most damaging cyclone on record. Other recent climate-related disasters include Cyclone Prema in 1993, which caused damages estimated at US\$60 million [Endnote: Vanuatu Country Assessment: World Bank Global Facility for Disaster Risk and Reduction; World Bank/GFDRR].

Cyclone Pam

Between March 12 and 14, 2015, Tropical Cyclone Pam struck Vanuatu as an extremely destructive Category 5 cyclone, with estimated wind speeds of 250km/h and wind gusts that peaked at around 320km/h. At approximately 11 p.m. local time, the centre of the cyclone passed east of Efate Island (the home of the capital city of Port Vila) and continued southward, passing just west of Erromango Island and Tanna Island.

Severe and widespread damage was worst on the larger islands of Tanna, Erromango, and Efate, while there was less damage on the smaller islands of Aneityum, Aniwa, and Futuna in the southern region. Eleven fatalities were confirmed in Tafea and Shefa Provinces. An estimated 65,000 people were displaced from their homes. Approximately 17,000 buildings were damaged or destroyed, including houses, schools, clinics, and other medical facilities. The tropical cyclone destroyed crops on a large scale. The livelihoods of at least 80% of Vanuatu's rural population are said to be compromised.

Initial estimations of the total economic value of the damage and losses caused by Cyclone Pam were in the order of US\$450 million - this is equivalent to 64.1% of Vanuatu's gross domestic product (GDP). These initial estimates were based on a rapid and incomplete survey of damage. Hence, it is highly probably that these figures *underestimate* the total impact. Initial findings are:

- the sectors that sustained the highest level of damage were housing, tourism sector, education and transport sector;
- The sectors that will sustain the largest levels of economic loss are expected to be agriculture and tourism;
- Total loss is highest on Shefa province, followed by Tafea and Penama; and,
- The vulnerable sections of society (the poor, women, youth, disabled, women-headed families) will be disproportionately the most affected.

With support from ADB and the Pacific Region Investment Facility (PRIF), the government undertook a specific, but rapid, assessment of damage to infrastructure on Efate⁸. The assessment found that, due to a combination of large water flows and debris build-up, many bridges and culverts on the road networks had experienced extensive damage. This includes damaged abutments, approaches, and scour protection. Several bridges had been destroyed, including Teouma and Mele on the Efate Ring Road. The road approaches to Creekeye Crossing and Marona Bridge had been washed away. Landslides had severed the road at several locations. Changed river flows had made many previous bridges inappropriate.

Box 1: Impacts of Cyclone Pam⁹

⁸ Impact Assessment Report on Efate and Epi Islands Transport Infrastructure (ADB, PRIF, April 2015)

⁹ Post Disaster Needs Assessment (PDNA), draft, Government of Vanuatu (March 2015)

8. In addition to the physical characteristics, other conditions contribute to the country's vulnerability to disasters. This includes the narrow base to the economy and the weakly developed economy, the weak inter- and intra-island communication and transport networks, and the wide dispersal of islands over a large ocean area - meaning many places are isolated. The relative remoteness of the country and the low population density also mean there are capacity constraints in several important sectors.

9. The World Risk Report 2013 assessed the respective risk of 173 countries of becoming a victim of disaster pertaining to extreme natural events. The risk is a function of the exposure to hazards and the vulnerability of society. Vanuatu is ranked the highest – i.e. the country most at risk - out of all 173. For these reasons, Vanuatu is still accorded UN-listed least developed country (LDC) status despite having a per capita GDP above the LDC threshold [Endnote:http://www.un.org/en/development/desa/policy/cdp/ldc/profile/vulnerability_profile_vanuatu.pdf].

Climate, Climate Change and Impacts on the Urban Development

10. An assessment of potential climate changes in Vanuatu was recently undertaken under the Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP) program, funded by the Australian Government, and led by CSIRO in collaboration with the Vanuatu Meteorological and Geohazards Department (VMGD) of the Government of Vanuatu [Endnote: Climate Change in the Pacific: Scientific Assessment and New Research – Volume 2, Chapter 16, Vanuatu Report.]. The study built on IPCC findings and was part of a study covering 15 Pacific countries. The latest results were published in April 2014. Specific projections for Vanuatu include:

- Maximum temperature is to rise by 1 – 1.5 degrees by 2055. There is low confidence in this projection, and the uncertainty is large;
- Annual rainfall is to rise by 1-8% by 2055. There is low confidence in this projection, and the uncertainty is large- ranging from -15% to +28%;
- Wet season rainfall is to rise by 3 – 5% by 2055. There is moderate confidence in this projection, and the uncertainty is significant, ranging from -9 to +20%; and,
- Mean Sea level is to rise by 19-20cm by 2055. There is moderate confidence in this projection, and the uncertainty is significant, ranging from +12 to +51cm.

11. It is important to note the large uncertainties and low confidence in the projections, and the fact that the projections are not particularly useful with regards to predicting 'events', such as storms, surges or resulting floods. Moreover the projections are at the country level: climate changes at island level or site level may differ. These PACCSAP projections represent an overall presentation rather than information for decision-makers.

12. One important climate hazard on Vanuatu is flash flooding as a result of short-term, intensive rainfalls and the varied topography. During the development of this Project, CSIRO prepared specific estimations of current short term rainfall intensities and projected rainfall intensities over the coming decades that apply to the Port Vila area. CSIRO, based on the worst case climate scenario, shows a projected 17% increase in the intensity of daily-total rainfall with a 2-year return period and a 27% increase in the 5-year event. By 2050, the projected changes are 23% and 39%, respectively.

13. The Climate Resilient Road Standards (CRRS) Project, supported by the Government of Australia, has undertaken complementary studies. The CRRS projections suggest that storm rainfall intensity (daily) will increase from the baseline to the 2030 time horizon but after that will remain more or less constant. They also predict small increases in storm intensity for short return periods, but larger increases in storm intensity for higher return periods.

14. The methodology and findings from CSIRO and CRRS are summarized in Annex E.

15. It is noted that the accuracy of these predictions is limited by two major constraints. First, the models themselves are incomplete, as with all climate change models. This is exacerbated by the fact that the target area is small and physically diverse (involving sea, islands and small mountains). Second, the baseline data is very incomplete

– i.e. there is no database of historical short-term rain fall figures for Port Vila. In order to project estimations for short-term rainfall, the findings are based on previous figures for daily rainfalls and subsequent estimations for hourly rainfalls.

Specific Climate Change Impacts on Urban Port Vila and its Infrastructure

16. The most evident impacts of climate change in Port Vila are: coastal erosion, flooding, increased sedimentation (affecting drainage) and compromised coastal infrastructure [Endnote: UN-HABITAT'S Cities and Climate Change Initiative Briefing Note (2010)]. Table 1, based on studies by ADB in the region, summarizes the potential kinds of impacts of climate change on road infrastructure [Endnote: ADB, 2011: Guidelines for Climate Proofing Investment in the Transport Sector Road Infrastructure Projects]:

Table 1: Showing the Category of Impacts of Climate Change on Road Infrastructure

Climate variable	Likely impact on road infrastructure
Changes in temperature (both a gradual increase in average temperature and increase in extreme temperatures)	<ul style="list-style-type: none"> • Can impact construction activities • Could damage road pavements (for example, heat-induced heaving, melting of bitumen and buckling of joints). • Deterioration of pavement integrity, such as softening of asphalt, traffic-related rutting, and migration of liquid asphalt due to increase in temperature (sustained air temperature over 32 C is identified as a significant threshold) • Thermal expansion of bridge expansion joints and paved surfaces.
Extreme weather events, such as stronger and/or more frequent storms,/storm surges	<ul style="list-style-type: none"> • Can delay construction activities • May affect the capacity of drainage and overflow systems to deal with stronger or faster velocity of water flows • Damage to road infrastructure and increased probability of infrastructure failures • Increased threat to stability of bridge decks • Increased damage to road signs, lighting fixtures, and supports • Rainfall and winds associated with cyclone would create flooding and affect roads, rail and airports and water transport. • Disrupt traffic and safety and emergency evacuation operations; • Affect traffic boards and information signs
Increased salinity levels due to sea level rise	<ul style="list-style-type: none"> • Could reduce the structural strength of pavements and lead to rusting of the reinforcement in concrete structures • Damage to highways, roads, underground tunnels, and bridges due to flooding, inundation in coastal areas, and coastal erosion • Damage to infrastructure from land subsidence and landslides • More frequent flooding of underground tunnels and low-lying infrastructure • Erosion of road base and bridge supports • Reduced clearance under bridges • Decreased expected lifetime of highways exposed to storm surges
Increase in intense rainfall events	<ul style="list-style-type: none"> • Damage to roads, subterranean tunnels, and drainage systems due to flooding • Increase in scouring of roads, bridges, and support structures • Damage to road infrastructure due to landslides • Overloading of drainage systems • Deterioration of structural integrity of roads, bridges, and tunnels due to increase in soil moisture levels • Higher rate of pavement deterioration • Scouring of embankments and bridges' foundations • Road blocks due to landslides and mudslides.
Increases in drought conditions for some regions	<ul style="list-style-type: none"> • Damage to infrastructure from mudslides in areas deforested by wildfires

17. The technical assistance activities undertaken as part of the preparation of this Project (i.e. through the Port Vila Urban Development Project Master Plan) [Endnote:ADB TA #7345, Situation Analysis and Master Plan, Formulation, Summary of Master Plan and Main Report (2010)]. included a thorough analysis of potential climate impacts on urban infrastructure in Vanuatu, in particularly in Port Vila, and of how these may evolve with climate change. These analyses determined that regular flash flooding is by far the most serious climate related concern for Port Vila. During flash floods, the runoff from downpours causes flooding and chaotic conditions for vehicles and pedestrian traffic in the city, and results in considerable financial and economic losses. Moreover, all road debris (such as silt, grit, garbage, waste, and oil) quickly reaches the sea, much of it quite rapidly, ultimately damaging the marine environment.

18. The PVUDPMP study identified the following negative impacts of the flash flooding in Port Vila:

- direct damage to infrastructure and property (in this case threatening the infrastructure provided by the PVUDP investment);
- disruption of road traffic;
- obstruction of access to residential property and businesses;
- safety risks for vehicles and pedestrians;
- flooding leaves the flooded areas polluted, covered with sediments;
- health risk from dirty water, pools where mosquitoes can breed and windblown dust when sediment has dried out; and
- financial and economic impacts on business and commerce (e.g. tourism).

19. The water catchment in the Greater Port Vila area falls into 39 sub-catchments (see map in Figure 2). Due to topographic and climatic conditions, the flash flooding in Port Vila is very frequent and very localised, within the sub-catchments. Although many parts of the town are never affected, other areas with constrained drainage are frequently flooded. These are the so-called flooding ‘hotspots’. Initial studies undertaken during the preparation of PVUDPMP identified 16 sub-catchments that already have serious drainage problems with frequent localised flooding, and an additional 8 sub-catchments that may be affected by drainage problems and localised flooding in the future. Further, the studies identified 42 flooding ‘hotspots’. At these hotspots, traffic and road infrastructure is regularly affected up to several dozen times per year by the flash floods. These also affect the lives and livelihoods of the community.

The Root Causes of Flooding and the Barriers to be Addressed

20. Urban management in Vanuatu faces several significant challenges, notably the high population growth rate and urban migration. The Government institutions currently have limited financial and technical capacity to face these challenges. The challenges are exacerbated by a growing economy, and the increasing demands of the vitally important tourism sector on the urban environment.

21. The urban population, notably in Port Vila, has been growing rapidly and in an unplanned and uncontrolled manner. It now accounts for over 25% of the total population in Vanuatu – compared with approximately 5% of the total population in 1980. Further, urban populations are estimated to be currently growing at about 4% per year. Most new arrivals in the urban areas are motivated by the hope of obtaining employment and access to better educational facilities for children. Most new arrivals live in informal settlement areas.

22. This growth places increasing demands on urban services, including on drainage. Currently, there are three main categories of barriers to meeting this demand for improved drainage, as follows.

23. Barrier no. 1: the inadequate and aging drainage infrastructure. Elements of this are:

- poorly engineered roads, frequently without curbs and frequently without channels to control runoff and carry runoff water to managed outfalls;
- ineffective and poorly located road gullies and drainage turnouts. These are also too few in number for the amount of surface water flow and for the many places with standing water;

- blocked sinkholes. Accumulated sediment blocks many sinkholes and impedes infiltration into the ground, and;[Endnote:A sinkhole is a large depression in a plane caused by the dissolution of carbonate rock. These form in topographic catchments with no path to carry runoff to a watercourse or the sea. Naturally, rainwater collects at the lowest point, contributes to dissolving the rock, and then slowly infiltrates into the carbonate rocks.]
- regular blocking of the drains, mostly by waste and debris.



Figure 2: Water Sub-catchments in the Greater Port Vila Area

24. Barrier no. 2: Limited experience of authorities with community mobilization and with working in partnership to overcome challenges, and so communities are not empowered. This is partly caused by a lack of capacity of the urban service providers to engage with communities. It is also partly caused by weak social organization in the communities themselves. Finally, unclear legislation and regulation, notably with regards to the ownership of assets, is not conducive to producing effective working partnerships amongst concerned stakeholders.

25. The Ministry of Infrastructure and Public Utilities (MIPU) has recently developed community based approaches to drainage maintenance in rural areas across Vanuatu, and has developed some related experience, but as of yet it has little operational experience of this in urban areas.

26. Barrier no. 3: Limited capacity to design and establish sustainable urban drainage systems. Currently, there are no effective planning procedures and planning capacity is limited. Also, capacity to monitor and regulate both private and public sector works is limited. Overall, there are currently no effective policies, regulations or codes of practice which adequately cover drainage. The National Building Code deals with buildings and their immediate environs, it does not cover roads and drainage - the only drainage issue it addresses is roof drains and the sizing of gutters and downpipes, it provides no approach to evacuating the rainwater. Existing road standards apply to low-volume rural roads and so need complementing for application in urban areas. There is no fixed Code for surface water drainage.

27. Note, further, that under the Roads Act, 'Asset Operators' are to be identified and be responsible for operating all public infrastructure. As of yet, very few of these 'Operators' have been identified. Many potential Asset Operators exist. It is noteworthy that these potential Asset Operators do not have the capacity for operations and maintenance. They do not have capacity related to climate change or disaster risk management. They have little understanding of

climate change and how it may impact public infrastructure. Annex F provides a rapid overview of the policy and legal situation related to road transport, urban planning and climate change.

28. To summarize, urban areas in Vanuatu, in particular Port Vila, already face climate related challenges, notably localised flash flooding at a series of hotspots. Climate change is projected to exacerbate these challenges – indeed this is considered to be the greatest climate change challenge in urban areas. Currently, a series of barriers limit ability to respond to these challenges. Finally, in March 2015, Tropical Cyclone Pam caused severe damage to Vanuatu, including to the transport infrastructure in Port Vila and across Efate island.

A.1.2 The Baseline Scenario

29. The baseline consists of the Port Vila Urban Development Project, the Emergency Assistance Project, and several associated baseline projects.

The Port Vila Urban Development Project

30. Previous analytical work supported by the ADB led to the preparation of the above-mentioned PVUDPMP in 2010. This Master Plan sets out the main physical and non-physical interventions required to address the sanitation and drainage challenges of the Greater Port Vila region until 2025. It further reviews a set of options for investment and it identifies high-priority investment projects.

31. Subsequently, in 2012, a decision was taken to expand the investments to include road construction as well as drainage and sanitation. These road investments will provide a complete, continuous network of roads that serve priority urban areas in the Great Port Vila area. As a result, the Port Vila Urban Development Project (PVUDP) was initiated with support from the Government of Australia and the ADB. The PVUDP incorporates the following outputs [Endnote: Inception Report (January 2014)]:

32. Output 1: The Government has improved the road network and drainage system in greater Port Vila. This is to be achieved through the rehabilitation and improvement of approximately 22 km of urban roads and footpaths and a related upgrading of the storm water drainage systems in flood prone water sheds. Works are to include road safety improvements and street lighting.

33. Output 2: The Government has improved the sanitation system in greater Port Vila. The disposal and treatment of sludge from domestic (up to 4,500 households) and commercial septic tanks is to be improved through better systems and management and through the construction of new sludge treatment systems.

34. Output 3: Central Area and settlement communities use improved hygiene facilities. A number of multipurpose, multi-user sanitation facilities including toilets, washing, and bathing facilities are to be constructed in villages and peri-urban settlements, with community participation in the operations and maintenance of the facilities. Public toilet facilities in the town centre and major sporting venues are to be rehabilitated and upgraded.

35. Output 4: Government agencies and community and user organizations have the capacity to effectively and efficiently manage sanitation, roads and drainage systems. Training is to be carried out in close consultation with other donor programmes to develop capacity and awareness. Capacity in the implementing agencies will be enhanced through the provision of training on: road pavement condition monitoring and repair; drainage system monitoring and maintenance; site monitoring and evaluation of sanitation infrastructure. The project is also to provide specific training on (i) gender awareness in hygiene and sanitation for government agencies and community and user organizations, and (ii) management and maintenance of communal sanitation facilities for women and youth groups as part of the project strategy for local employment generation.

36. Output 5: Efficient project management services are provided. The project is to provide technical support and advisory services to the Executing and Implementing Agencies.

37. The detailed infrastructure designs of the PVUDP are being finalized. The following funding has been secured to the baseline project: ADB loan (US\$5 million); Government of Australia Department of Foreign Affairs and Trade (DFAT) Channel Financing Grant (US\$4.5 million); DFAT Project-Specific Grant (US\$26.5 million), and; Government of Vanuatu (US\$3.1 million). A total of US\$39.1 million. [Endnote:Report and Recommendation of the President to the Board of Directors, ADB, 2011.]

38. Output 1 is the improvement of the road network and drainage system in greater Port Vila. As mentioned above, assessments made under the Port Vila Urban Development Project Master Plan (PVUDMP) identified that by far the most serious climate related issue in Port Vila is regular flash flooding. Hence, in order to adapt to climate change, the over-riding priority is to ensure that the road network and drainage system that is constructed under the PVUDP is resilient to climate variability and climate change.

The Planned Road Network and Drainage System under the PVUDP

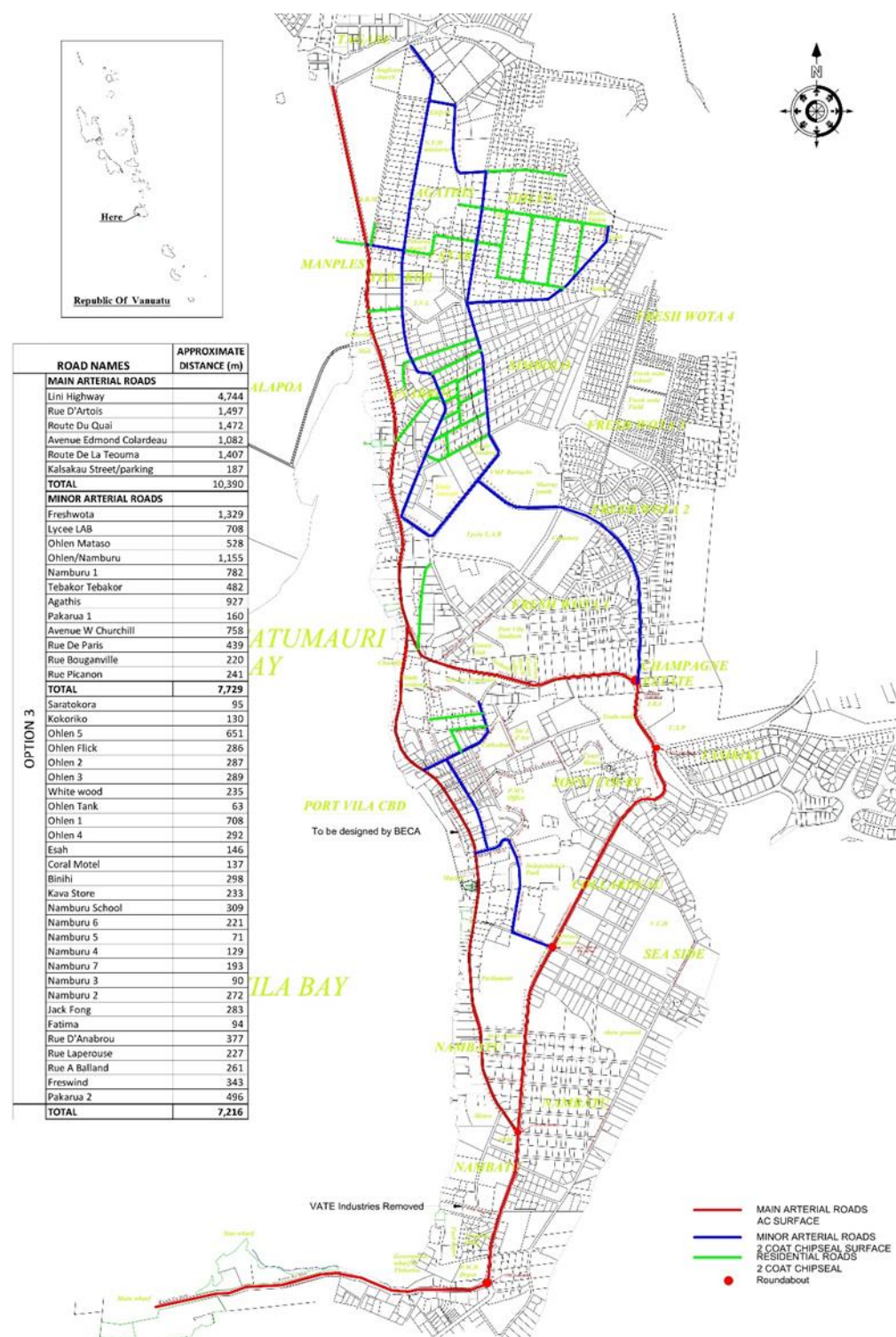
39. Figure 3 illustrates the main roads to be rehabilitated and reconstructed in Port Vila.[Endnote: PVUDP, Second Quarterly Report (June 2014).] Annex G provides more detailed figures and design information on the priority roads to be rehabilitated under PVUDP.

40. The design team considered many approaches to Output 1 (Improved road network and drainage system). Ultimately the design is set into two packages: the Southern Section and the Northern Section. The Northern section consists of 13.234 km of roads and 7.689 km of drainage. The roads consist of arterial/collector/distributor roads (1.952 km), local roads (5.822km), access roads (3.329 km) and shareways (2.132 km). The Southern section consists of 11.878 km of roads and 9.762 km of drainage. The roads consist of arterial/collector/distributor roads (8.277 km), local roads (3.036km) and shareways (0.565 km). [Endnote:Design Progress Review Report no. 1 – Roads and Drainage. April 2015, PVUDP consultant team]

41. In order to design the drainage systems, the two sections are divided into a series of 21 sub-catchments, 15 in the South and 6 in the North.

42. In designing the drainage system, in order to optimize costs and benefits, PVUDP consisted many combinations of pipes, tunnels and soakaways. The PVUDP undertook cost analysis, value engineering and reputational analysis, before opting for the current design. Annex G provides the key design drawing for the PVUDP. Annex G also provides basic information on the design types and parameters for the drainage in each sub-catchment.

Figure 3: Map Illustrating the Roads to be Upgraded and Constructed under the PVUDP[PVUDP, Second Quarterly Report (June 2014)]



43. Table 2 provides the cost estimates for the PVUDP before taking account of climate change.

Table 2: Cost estimates for PVUDP (without climate proofing)

Section	Description	Cost (US\$)	Drain Length (km)	Road Length (km)
NORTHERN				
	General requirements	1,777,242		
	Drainage	5,571,534	7.69	
	Roads	9,489,171		13.23
	Utilities	143,000		
	Sub-total	16,980,947		
	Contingency (approx. 10%)	1,764,953		
	Total estimate	18,745,900		
SOUTHERN				
	General requirements	1,777,242		
	Drainage	5,845,242	9.76	
	Roads	12,185,526		11.878
	Utilities	585,000		
	Sub-total	20,393,010		
	Contingency (approx. 10%)	2,109,444		
	Total estimate	22,502,454		
	GRAND TOTAL	41,248,354	17.45	25.11

[Design Progress Review Report no. 1 – Roads and Drainage. April 2015, PVUDP consultant team]

The Response to Cyclone Pam – The Emergency Assistance Project

44. Following Tropical Cyclone Pam in March 2015, the international community has mobilised to support the Government of Vanuatu in its disaster response and recovery efforts. The draft ‘Post Disaster Needs Assessment’ (PDNA, Government of Vanuatu, March 2015) has determined the priority recovery and reconstruction investments. These are summarized in Table 3.

Table 3: Summary of first estimate costs for recovery from Pam

	Recovery Needs (VT, millions) ¹⁰		
	Short term (0-1 years)	Medium to long term (2-4 years)	Total
Productive sectors	4,510	1,321,	5,832
Social sectors	1,236	18,729	19,964
Infrastructure	3,574	2,610	6,184
(of which, transport)	(2,189)	(1,734)	(3,923)
Cross-cutting sectors	38	90	128
Social and households	694	844	1,539
Disaster risk management	275	203	478
TOTALS	10,326	23,798	34,124

45. From Table 3, it can be seen that the entire recovery costs are estimated at just over 34 billion VT or US\$316 million. It should be noted that these costs are based on a rapid and incomplete assessment; when more thorough assessments are undertaken, more needs will be determined, and the costs of recovery are expected to increase accordingly. Also from Table 3, it can be seen that the recovery costs for the transport sub-sector are estimated at \$36

¹⁰ US\$1 = 108VT

million. Again, this figure is likely to increase greatly, once a more thorough assessment can be undertaken. Although these figures do account for building back better, they do not account for climate change in the baseline.

46. In order to support the recovery, the ADB has mobilised funds from the Asia Development Facility (ADF) and the Asia-Pacific Disaster Response (APDRF). In the baseline, the ADB has mobilised US\$8.23 million from these sources for the Emergency Assistance Project. This Project is focussing on the recovery of the transport sector on Efate, in particular on the reconstruction of the Efate Ring Road.

47. Given that the PVUDP lies in Port Vila, it addresses roads that connect to the Efate Ring Road. The Efate Ring Road passes through Port Vila and at this point is to be supported under the PVUDP. Accordingly the PVUDP project and the Post Pam Emergency Assistance Project are closely related and connected.

Associated Initiatives in the Baseline

48. Three ongoing initiatives are closely related to the PVUDP baseline project and the Emergency Assistance Project. These are introduced in the following paragraphs.

49. The Vanuatu Climate Resilient Road Standards Project (CRRS). The overarching aim of the CRRS project is to mainstream climate change adaptation measures into the routine activities of the Vanuatu Public Works Department (PWD) of the Ministry for Infrastructure and Public Utilities (MIPU). This includes measures such as the modification of road designs to ensure they are climate resilient. The CRRS project also aims at generally developing the capacity and capability of PWD staff to incorporate climate resilience issues into future planning. The key project outcome is to build the capacity of the Government of Vanuatu (GoV) to incorporate climate risk analysis into road transport infrastructure project identification, formulation and execution based on latest climate change science and risk information tools available.

50. CRRS is financed by the Australian Department of Environment through the Pacific Australia Climate Change Science Planning Program (PACCSAP) and implemented in combination with the Roads for Development Project (see below). The principle outputs of CRRS so far are:

- Ongoing support to PWD and the MIPU in road infrastructure planning and managing climate risk and climate change;
- Climate resilient road standards for Vanuatu (applicable to low volume, rural roads);
- Sub-national climate profiles relevant to transport planning; and,
- Climate screening tools applicable to road planning and design.

51. Vanuatu Transport Sector Support Program - Phase II (equally known as the “Roads for Development” or R4D Program). Supported by the Government of Australia, the fifteen-year Vanuatu Transport Sector Support Program (VTSSP) aims to meet Vanuatu’s needs for an efficient road network. The Aus\$16.9m first phase of VTSSP (VTSSP I) commenced in September 2009 and ended in July 2012. VTSSP I focused on the maintenance and rehabilitation of priority roads on the islands of Ambae, Malekula and Tanna, as well as institutional reform within the Public Works Department PWD of the MIPU.

52. The VTSSP Phase II, or R4D, is a Aus\$37 million, four-year commitment by the Government of Australia to assist the people of Vanuatu to gain increased access to a well-maintained and affordable rural road network. R4D supports the Government of Vanuatu to effectively plan, build, and maintain its road transport infrastructure. The program aims also to streamline public works administration and to specifically provide economic benefits to communities. This program also directly involves island communities in managing, maintaining and ultimately using improved roads, which will stimulate economic activity and improve access to services. R4D has essentially two outcomes: PWD Institutional Transformation and PWD Service Delivery.

53. Mainstreaming Disaster Risk Reduction in Vanuatu Project (MDRR). Funded by the Government of Japan through its Policy and Human Resource Development Trust Fund (PHRD), and implemented by the World Bank. This Project covers the period 2013-2015 with a grant contribution of US\$ 2,728,000. The leading agencies from Vanuatu are the Vanuatu Meteorology and Geo-hazards Department (VMGD) and the National Advisory Board on Climate Change and Disaster Risk Reduction (NAB). The MDRR project aims to strengthen urban planning and tsunami preparedness in the main urban areas of Vanuatu through the following specific outcomes:

- Risk information and risk reduction considerations incorporated into urban planning process and policies;
- Tsunami warning services strengthened and community access to timely and accurate warnings improved; and
- A joint National Platform for Disaster Risk Management and Climate Change Adaptation established.

54. One key initiative under MDRR is the Risk Mapping and Planning for Urban Preparedness exercise to be implemented during 2015. The overall objective of this work is to strengthen urban planning and tsunami preparedness in the main urban areas of Vanuatu (both formally planned and informal settlements). This is to be achieved through incorporating risk information and risk reduction considerations into the urban planning process and policies. A major focus of this work will be providing better information and management tools for decision-makers related to flash flooding in Port Vila.

55. The CRRS, R4D and MDRR are not formally considered as co-financing. They do connect in a general manner to the overall Objective of the PVUDP Project. During the PVUDP Project design phases, there has been close and regular consultation between PVUDP and CRRS, MDRR and R4D, with the support of the MIPU and PWD.

A.1.3 The LDCF Supported Alternative

56. The LDCF funds will be used, together with the PVUDP project and Emergency Assistance Project, to protect urban areas in Vanuatu against the impacts of climate change and to ensure the building back after Cyclone Pam is climate change resilient.

57. The LDCF Project Objective is to reduce vulnerability and increase resilience to climate change hazards in urban areas and the transport sector in Vanuatu. To achieve this, the LDCF Project has two components with four Outcomes.

58. Component 1: Strengthening the climate resilience of infrastructure , with Outcome 1.1: The urban road infrastructure is climate proofed; Outcome 1.2: Climate resilience integrated into post-Pam cyclone recovery efforts; and Outcome 1.3: Climate resilient, sustainable urban drainage implemented at urban sub-catchments.

59. Component 2: Enabling adaptation through improved decision-making and knowledge development, with Outcome 2.1: Technical assistance provided and capacity developed.

Outcome 1.1: The urban road infrastructure is climate proofed.

Baseline

60. The Baseline is the PVUDP Project (Output 1- Drainage and road improvements). The costs of the baseline investment are estimated at US\$ 32 million from the PVUDP.

61. An assessment was made of the potential climate change impacts on each Output of the PVUDP Project. Next, potential climate proofing and adaptation measures were prioritised and selected. The results are presented in Table 4.

Table 4: Showing the Potential Impacts of Climate Change on the PVUDP and the Proposed Adaptation Measures

PVUDP Output	Potential Climate Change Impact	Adaptation Measures Selected
1. Improved road network and drainage system.	(a) increased temperatures affect road surface; (b) increased rainfall intensity affect road surface; (c) increased rainfall intensities lead to increased flash flooding.	(a) and (b) are considered to be minor or negligible and no adaptation measures are proposed. (c) is considered very serious. The drainage network is to be adapted accordingly.
2. Improved sanitation system.	(d) Potentially, 'climate' migrants will lead to increased urban population and increased demand for urban services; (e) Potentially decreased seasonal rainfall will lead to water shortages, therefore potentially affecting the operation of sludge treatment plants.	None. There is currently no sign of (d) happening. The situation will continued to be monitored. In the event that (e) occurs, freshwater for sludge treatment can be taken (seasonally) from available groundwater supplies which are abundant.
3. Improved hygiene facilities.	Potentially, 'climate' migrants will lead to increased urban population and increased demand for urban services.	None. There is currently no sign of this happening. The situation will continued to be monitored.
4. Capacity to effectively and efficiently manage urban systems.	Minor or negligible.	Not applicable.
5. Project management services.	Minor or negligible.	Not applicable.

62. As can be seen from Table 4, by far the most serious potential impact of climate change on the PVUDP is the risk of increased rainfall intensities leading to increased flash flooding affecting Output 1 only.

63. The PVUDP drainage is designed to meet the one in two year return rainfall (ARI 2). Work by CSIRO and CRRS has helped determine the projected increases in intensive (sub-daily) rainfalls in the Port Vila region (see Annex E). Although great uncertainties remain, it has been determined that drainage designs should be modified to allow for a 20% increase in the short-term intensive rainfalls. In the baseline, the PVUDP drainage infrastructure will not be adapted to this expected increase in rainfall, and hence the PVUDP will be subject to physical damage and a lessened economic performance.

Alternative

64. In the alternative, with the additional investment from LDCF, the drainage will be adapted to the expected increases in short-term intensive rainfall. The drainage system will be designed to allow for a 20% increase in the short-term intensive rainfall. Table 5 provides the cost estimates for the PVUDP with taking account of climate change [Endnote: Design Progress Review Report no. 1 – Roads and Drainage. April 2015, PVUDP consultant team.]. The additional costs associated with the climate proofing are \$1.37 million.

Table 5: Cost estimates for PVUDP (with climate proofing)

Section	Description	Costs (without CC)	Costs (with CC) (US\$)	Drain Length (km)	Road Length (km)
NORTHERN					
	General requirements	1,777,242	1,777,242		
	Drainage	5,571,534	6,240,118	7.69	
	Roads	9,489,171	9,489,171		13.23
	Utilities	143,000	143,000		
	Sub-total	16,980,947	17,649,531		
	Contingency (approx.)	1,764,953	1,764,953		

	10%)				
	Total estimate	18,745,900	19,414,484		
SOUTHERN					
	General requirements	1,777,242	1,777,242		
	Drainage	5,845,242	6,546,671	9.76	
	Roads	12,185,526	12,185,526		11.878
	Utilities	585,000	585,000		
	Sub-total	20,393,010	21,094,440		
	Contingency (approx. 10%)	2,109,444	2,109,444		
	Total estimate	22,502,454	23,203,884		
GRAND TOTAL		41,248,354	42,618,368	17.45	25.11

65. The Output under this Outcome (Output 1.1.1) is 17.45 km of drainage and 25.11km of urban roads are designed, constructed and managed in a manner resilient to the two-year return period flash-flooding.

66. The additional total costs of this alternative are expected to be \$1.37 million, and the LDCF will cover these costs.

Outcome 1.2 Climate resilience integrated into post-Pam cyclone recovery efforts

67. Table 3[Taken from the Post Disaster Needs Assessment (PDNA)] above very conservatively estimates the costs of recovery from Cyclone Pam to be US\$316 million. Moreover, the costs of recovery in the transport sub-sector are very conservatively estimated to be \$36 million. A key component of the recovery is the rehabilitation of the Efate Ring Road, which suffered a great deal of damage. The Efate Ring Road is the principal communication network on Efate, which is the island with the largest contribution to the economy and the largest population. The ring road is vital to the social and economic well-being of the country. [Efate ring road comprises 130km of bituminous sealed highway with twenty bridges or wet crossings linking the capital of Port Vila.]

68. In the baseline, the ADB supported Emergency Assistance Project will build back the Efate Ring Road, based on the principle of 'building back better', but without taking full account of climate change. The baseline investment is \$8.23 million. However, in the baseline, the Ring Road will remain vulnerable to climate change. Table 6 below indicates the type of impact caused by Cyclone Pam, and how the baseline rehabilitation measures may not be adapted to climate change in the baseline.

69. In the LDCF supported alternative, in order to ensure the Efate Ring Road is climate resilient, the following principles will be adopted:

- (i) ensure that it is located, designed, built and operated with the current and future climate in mind;
- (ii) ensure that the maintenance regimes incorporate resilience to the impacts of climate change;
- (iii) ensure the construction design and materials are resilient to potential increases in extreme weather events such as storms, floods and heatwaves;
- (iv) build in flexibility so that, if possible, the assets can be modified in the future without incurring excessive costs; and,
- (v) ensure that the stakeholders responsible for design/construction/maintenance/supervision have the necessary skills and capacity to implement adaptation measures.

69a. Specifically, the following modifications are anticipated to adapt the EAP project to climate change (as this is an emergency response project, the design the details are to be determined during implementation):

- bridges and wet crossings being designed to take into account increased stream river flows for Q50 to Q100 flood events (possibly revised after the events of cyclone Pam);

- increased strengthening of coastal sections to protect against storm surges and tidal effects;
- revised drainage construction methods to reduce landslides at Klemhs hill (by removing culverts and diverting water along improved concrete drains);
- Use of collection chambers to dissipate energy of the water and collection of silt.

70. The most important principle is (iii), i.e. ensuring the construction design and materials are resilient. As the details of the design of the Emergency Assistance Project are not yet available, the design and materials required for resilience are not yet known. During design, each of the issues listed in Table 7 will be considered in order to integrate adaptation to climate change into the rehabilitation of the Efate Ring Road.

Table 6: ADB Emergency Response Project for Efate Ring Road: Gaps in proposed rehabilitation measures with respect to future climate change

Point on Ring Road	Impact of Cyclone Pam that leads to required rehabilitation measure	How proposed rehabilitation measure may not consider future CC
Teouma Bridge	Approach washed out on western end and river bank scour	<p>The design and proposed materials for the rehabilitated infrastructure may not consider anticipated climate change. For example:</p> <ul style="list-style-type: none"> • the need to have thorough, climate sensitive hydrology studies carried out in the redesign of the bridges and crossings; • the need to have the water flow centralized under the bridge or over the low level crossings through river training measures; • the need to incorporate a safety or risk factor in the designs; • the need for protected banks and increased drainage capacity; • the need for increased water retention capacity (physical or biological) upstream of infrastructure; • the need for granular protection of key infrastructure; • the need to provide additional protection of abutments, approach roads and piers from scouring; • the need to include debris removal soon after rain or floods at each crossing into existing labour intensive community contracts; • (at Klems Hill) the need to upgrade the drainage system.
Eton Dry Creek -	Failed guard railing, scoured around gabion protection on downstream and damaged sealed surface. Damage was mainly due to storm surge	
Eton Beach Bridge	Failed guard railing and failed gabion protection on downstream. Damage was mainly due to storm surge	
Lacrossenier Bridge	Debris blocking 50% of the cells and minor scour around downstream	
Neslap Low Level Crossing	Scour on the approach. Debris blocking waterway in the upstream and gravel deposit in the downstream	
Epau Low Level Crossing	Gravel built up blocking approximately 30-40% of the waterway in the upstream and gravel deposit in the downstream. Flood gauge dislodged	
Sara Bridge	Debris blocking waterway. Scour at upstream approach. Wingwall and kerb damaged at downstream. Scour around pipe encased concrete. Damaged surfacing	
Malatia Armco Culvert	Scour behind the gabion wall and minor damage to wingwall.	
Marona Bridge	Section of the approach washed out and 5 no of bridge kerb damaged. Silt built-up inside the pipes	
Havana Culvert	Debris blocking the pipe and scour at downstream due to improper road drainage outlet	
Creekeye Bridge	Western approach was washed out and 50% of the waterway is blocked by gravel deposit. Eastern wingwall is cracked and scoured around.	
Mele Bridge	Bridge suffered extensive scouring. Eastern approach was washed out and western approach abutment was undermined. Both abutments' scour protections failed. Guard fence failed	
Landslip at Klems Hill	Failure of slope above the road blocked one lane of traffic. Some section of the above slope is unstable. Failure of slope below the traffic undermines the stability of the concrete road pavement. Below slope failure was due to improper road drainage outlet.	

Table 7: Climate resilient actions to be considered during design, construction and maintenance

Design	<ul style="list-style-type: none"> • Raising the level of the road or the pavement in low lying areas; • Constructing levy banks with drainage and protected walls; • Road and stream realignment; • Including additional longitudinal and transverse drainage systems; • Increasing water retention capacity and slow infiltration through environmental measures and bio-retention systems to recharge aquifers and reduce surface flow runoff; • Applying a safety factor to design assumptions; • Reducing the gradients of slopes; • Increasing size and number of engineering structures including provisions of additional (water ways, hydraulic structures, high and low river crossings) following thorough hydrology studies; • Providing river training works to centralize flows; • Providing protection of abutments, approach roads and piers from scouring; • Allowing for alternative routes in the event of temporary road closures; • Installing storm protection systems such as windbreaks; • Reinstate and protect future landslips.
Materials	<ul style="list-style-type: none"> • Protecting levy bank with vegetation or mangroves; • Replacing corrugate armcore culverts with reinforced concrete box culverts or larger diameter concrete culverts; • Using flexible pavement structures; • Using matting/erosion control blankets; • Applying granular protection; • Moistening of construction materials; • Obtaining the optimum level of compaction (to avoid any subsequent settlement); • Ensuring the selection of materials has high resistance to flooding and high temperatures; • Testing the appropriateness of materials for subgrade, sub-base and base course for road works; • Testing and ensuring for appropriate concrete strength for concrete structures.
Monitoring and maintenance	<ul style="list-style-type: none"> • Improved monitoring, e.g. for submergence under floods or sea incursions; • Increasing maintenance budgets to clear debris, landslides and dust.

71. The Output under this Outcome (Output 1.2.1) is the Efate Ring Road is built back and managed in a manner resilient to climate change. The additional cost of incorporating these climate resilient investments is estimated to be US\$2.68 million. The ratio of baseline costs to LDCF costs is 8.23:2.68, 3:1.

Outcome 1.3: Climate resilient, sustainable urban drainage implemented at urban sub-catchments.

Baseline

72. As discussed above, the drainage is designed to meet the one in two year return short term intensive rainfalls. Hence, it is designed to be flooded every two years on average. Moreover, given that flooding is very irregular and very localized, it can be anticipated that there will be flooding at some points in Port Vila much more regularly – many times per year. Hence, localized flooding will be quite common even in the LDCF financed alternative.

Alternative

73. With support from LDCF and from the PVUDP (under its Outputs 4 and 5 that cover supervision of design and developing capacity for design and implementation) the alternative for Outcome 1.3 includes a package of support, measures and technologies for urban communities that are affected by flash flooding. Together, these: (i) enable communities to cope with the flash floods and (ii) enable communities to implement sustainable, community-centred urban systems that actually reduce the flooding. Outcome 1.3 builds on and complements ongoing work by the MIPU/PWD to engage with communities in rural areas, through which communities are involved in construction and maintenance.

74. The PVUDP covers 21 sub-catchments, however, limited LDCF funds mean that initially only 2-3 sub-catchments can be covered under Outcome 1.3.

75. Outcome 1.3 is to be implemented through a participatory approach, with a full consultation of the urban communities. Further, as the PVUDP baseline project is implemented, the design of some baseline activities may be modified. Hence, a degree of flexibility is built into the choice of activities under Outcome 1.3. Outcome 1.3 is to be implemented through the following Outputs:

76. Output 1.3.1: Two priority sub-catchments selected. The two priority sub-catchments will be selected amongst the 21 targeted by PVUDP (see Annex G). The selection criteria will include: levels of poverty in the sub-catchment; number of people at risk; likelihood of flooding; and value of economic infrastructure at risk.

77. Output 1.3.2: Two sub-catchment level action plans. These will be prepared through a thorough consultative process involving the community and other stakeholders in the two selected sub-catchment. This consultative process will first identify the major concerns of the community related to climate change (for example the priority may be localised flash flooding and the need for coping measures). It will then identify possible actions and measures to (i) cope with the anticipated flooding and (ii) to reduce the anticipated flooding through off the right-of-way measures [Endnote: Measures on the right-of-way are implemented under Outcome 1.1. Measures off the right-of-way are subject to a different legal standing and require a more active participation and validation by the concerned community members, in particular any landowner or asset owner. These cannot be implemented under Outcome 1.1.].

78. Output 1.3.3: Priority measures to ensure the urban communities can cope with floods are implemented. That is, the measures identified in (i) under Output 1.3.2 will be implemented. As the measures are to be developed through a participatory process, they are not yet known. They may include the following:

- Awareness raising and information sharing on potential flooding and impacts. This would notably complement awareness raising implemented directly under the PVUDP;
- Develop sub-catchment level community disaster risk management (DRM) plans. This would notably complement island and city wide DRM developed with the support of the World Bank MDRR project;
- Install sub-catchment level early warning systems (EWS). This would notably complement the island and city wide EWS being developed with the support of the World Bank MDRR project;
- Install information and warning signs;
- Install physical protection to buildings at risk;
- Install small protection or equipment to protect economic assets (e.g. to protect wells or to raise market stalls);
- Construct a small-scale temporary evacuation center;
- Construct footbridges over localized flooding hotspots;
- Design and testing of a climate focused insurance mechanism;
- Provide equipment for post flooding clear up with a focus on the removal of any health risks;

79. Output 1.3.4: Priority off the right-of-way measures to reduce floods are implemented with the participation of the urban communities. That is, the measures identified in (ii) under Output 1.3.2 will be implemented. As the measures are to be developed through a participatory process, they are not yet known. They may include the following:

- Purchase small land plots in order to construct additional channels and soakaways or water reserve sites. As this involves purchasing land from local community members it is subject to the ADB's strict social safeguards;
- Construct small-scale channels to divert water into alternative soakaways or water reserves, on either community-owned or public land;
- Establish community contracts to cover maintenance of drains and soakaways;
- Establish community contracts to undertake solid waste management;
- Establish local wetland reserves as temporary flood water holding areas;
- Tree planting in order to increase infiltration and evaporation rates;

- Within residential allotments, on privately owned land, support the construction of storm water disposal facilities such as soakaways.

80. Output 1.3.5: Knowledge management. The VPMU will monitor Outcome 1.3 continuously in order to draw lessons and to learn. This will include cost monitoring and cost-benefit assessment of adaptation measures. As this is a very innovative Outcome, lessons learnt will be disseminated to other urban areas, to other Pacific islands and countries, and throughout the GEF and ADB networks.

81. The total costs of this alternative to Outcome 1.3 are expected to be US\$5.5 million. LDCF will contribute US\$1 million to these additional costs. The remainder is covered by the PVUDP project.

Outcome 2.1 Technical assistance provided and capacity developed.

Baseline

82. In the baseline, the PVUDP project provides technical assistance and builds capacity (under its Outputs 4 and 5). In the baseline the focus is on supporting the basic design and maintenance of the roads and drainage, and building management capacity to manage the road transport assets. The focus includes stakeholders at national level and in the Port Vila urban municipal government. The focus does not include capacity building related to climate change and climate change adaptation.

Alternative

83. With support from LDCF, under Outcome 2.1, the focus of technical assistance and capacity development will be expanded to include additional national level stakeholders and stakeholders from all other urban areas in Vanuatu. Moreover, the technical focus of the technical assistance/capacity building will be expanded to cover their capacity to plan, build, operate and maintain climate resilient (CR) roads and drainage systems. One focus of this technical assistance and capacity building will be the municipal planners and managers from all urban areas across Vanuatu. A second focus will be the potential 'Asset Operators' [EndNote: under the Roads Act, Asset Operators are to be identified and be responsible for all public infrastructure] (in the baseline most potential Asset Operators do not have knowledge or capacity for climate change adaptation or DRM).

84. Outcome 2.1 is to be implemented through a participatory approach, through the full consultation of urban planners and managers and representatives of urban communities.

85. As the PVUDP baseline project is implemented, the design of some baseline activities may be modified. Hence, a degree of flexibility is built into the choice of activities under Outcome 2.1. Outcome 2.1 is to be implemented through the following Outputs:

- Output 2.1.1: Climate Resilient Urban Road Standards/Guidelines. The CRRS project has developed Climate Resilient Road Standards/Guidelines for low volume, rural roads. These do cover many aspects of urban roads. Under the Output, any gaps and modifications required for urban roads will be developed;
- Output 2.1.2: Port Vila Disaster Risk Management Plan. This will cover notably how to maintain key services (energy supply, hospitals, etc.) through a disaster;
- Output 2.1.3: A cadre of trained and capable personnel in the potential Asset Operators. Training will cover climate change and disaster risk management. Training will also cover climate resilient roads and drainage systems;
- Output 2.1.4: A cadre of trained and capable personnel in the private sector consulting companies who may be involved in future construction/operation/maintenance of climate vulnerable infrastructure. This will be implemented in a manner that does not privilege any individual private sector companies but rather helps develop the private sector as a whole;

- Output 2.1.5: Climate resilient building codes and related regulatory support. Based on the knowledge acquired during implementation of the PVUDP project, building codes and other regulations will be drafted and submitted for approval.

86. The total costs of this alternative implementation of Outcome is US\$2.5 million. LDCF will contribute US\$0.5 million to these additional costs. The remainder is covered under the PVUDP project, mostly as part of the baseline.

Alignment with GEF/LDCF Focal Area Strategies

87. The project aligns to, and contributes to, the LDCF focal area strategies and outcomes as explained in Table 8.

Table 8: Showing alignment to GEF/LDCF Focal areas

Focal Area Objectives/Programs	Focal Area Outcomes	Alignment
CC-A 1, Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change	1.1 Mainstreamed adaptation in broader development frameworks at the country level and in targeted vulnerable areas.	<p>The Project will mainstream adaptation into the socio-economically vital transport sector and into the urban development sector. This is to be achieved through mainstreaming into a main investment programme, through capacity building of concerned institutions and staff training, and through development of tools and guidelines.</p> <p>As a result, vulnerable people and groups in Port Vila and Efate will have more resilient assets and livelihoods.</p>
CC-A 1, Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change	1.2 Reduced vulnerability to climate change in development sectors.	<p>The transport sector will be significantly less vulnerable to climate change as a result of this project, in Port Vila and across Efate.</p> <p>As a result, vulnerable people and groups in Port Vila and Efate will have more resilient assets and livelihoods.</p>
CC-A 2, Strengthen institutional and technical capacities for effective climate change adaptation	2.1 Increased knowledge and understanding of climate variability and change induced threats at country level and in vulnerable areas.	<p>The Project includes an important capacity building component and an important knowledge management component. Hence, there will be increased knowledge and understanding of climate variability and change induced threats. This is essential because there is still a great deal of uncertainty regarding climate change and its impacts in Vanuatu.</p> <p>The concerned institutions: MIPU, PWD and Port Vila Municipal government, will be significantly strengthened through these interventions.</p>

Meeting Environmental and Social Safeguards

88. Overall supervision of the GEF Funds is subject to the ADB due diligence and safeguards system and all environmental and social safeguards will be ensured through this system. GEF funds are used to provide climate proofing to baseline investment projects and associated technical support and capacity development. There are no additional risks or concerns associated with the GEF funds. Hence, the management of safeguards for GEF funds is through the management of safeguards of the baseline investments. The approach to managing environmental (including natural habitats), resettlement and indigenous people safeguards in the baseline projects is summarized in Table 9. In addition, attention to governance issues, to the protection of physical cultural resources and to accountability/grievance will be provided through standard ADB procedures.

Table 9: Approach to safeguards in baseline projects

Baseline Project	Environment	Resettlement	Indigenous Peoples
The Port Vila Urban Development Project	Category B. The initial environmental examination found potential small scale impacts, mostly short-term (during construction). All required mitigation measures are defined in an environmental management plan.	Category B. The only pertinent issue was the sludge treatment facility which required land acquisition but has now been significantly modified. The rehabilitation of the road and drainage is not expected to require any acquisition of land. GEF funds (under Output 1.3.4) may support purchase of small land plots from local community members in order to construct additional channels and soakaways. This will only be undertaken if entirely voluntary.	Category C. Melanesians comprise the vast majority of Vanuatu's population. The project is not expected to impact any distinct and vulnerable group of indigenous peoples.
The Emergency Assistance Project	Category B. The project is expected to have limited, site-specific and in most cases temporary adverse but mitigatable impacts on the environment. The environmental assessment and review framework (EARF) has been prepared and sets out the procedures for the environmental assessment and clearance all work.	Category C. The project is not expected to involve land acquisition and resettlement, as infrastructure will be rehabilitated or reconstructed at existing locations within the established road corridor.	Category C. Melanesians comprise the vast majority of Vanuatu's population. The project is not expected to impact any distinct and vulnerable group of indigenous peoples.

Monitoring and Road Maintenance

88a. The baseline projects include a total investment of approximately \$47 million in infrastructure. Maintenance is an issue through the project lifetime and in the 20 year period following project implementation. Operations, monitoring and maintenance of the infrastructure is essential to the success of the baseline project. This monitoring/maintenance cannot be separated out for the GEF component. These monitoring costs are covered by the baseline project.

88b. The PVUDP baseline project will develop operations and maintenance capacity through its Output 4 (Government agencies and community and user organizations have the capacity to effectively and efficiently manage sanitation, roads and drainage systems) and its Output 5 (Efficient project management services are provided). The total budget allocated to these is US\$1.6 million. In line with international best practices, this will include cyclic, routine/planned, periodic and emergency maintenance. Detailed cost estimates have been prepared and are available upon request.

88c. The PVUDP does include elements of community monitoring/maintenance. However, monitoring/maintenance is mainly government led (either directly by local government departments, or indirectly through sub-contracted, performance based, private sector organizations). This is based on best international experience for transport infrastructure in urban areas. (note that, for the community sanitation facilities to be constructed under PVUDP, the maintenance will be managed by the communities themselves – again in line with international best practices).

88d. Finally, as the Emergency Assistance Project (EAP) covers rural as well as urban areas, it is envisaged the community maintenance contracts will be used extensively in rural areas (as this is an emergency response project, details are to be determined during implementation).

88e. Further, the ADB is working with the Government of Australia, Japan and New Zealand on several projects that contribute to strengthening capacity of the MIPU. This includes through the associated projects (Vanuatu Climate Resilient Road Standards Project; Vanuatu Transport Sector Support Program - Phase II and Mainstreaming Disaster Risk Reduction in Vanuatu Project). All of these projects include a strong emphasis on developing monitoring and maintenance capacity. Hence there is a large overall effort to increase capacity to monitor/maintain infrastructure which should remove this risk.

A.1.4 Additional Cost Reasoning

89. The major costs under the Project are for Outcomes 1.1 and 1.2. Under Outcome 1.1, LDCF funds are used to climate proof the roads and drainage. The total additional costs for this climate proofing in is estimated to be \$1.37 million. These funds are entirely used for climate proofing.

90. Under Outcome 1.2, LDCF funds incorporate climate change resilience into the recovery from Tropical Cyclone Pam, specifically into rehabilitating the Efate Ring Road. The design of the Ring Road is not yet available, and so a thorough additionality analysis has not yet been possible. Based on previous experience, and in line with LDCF co-financing guidelines, a ratio of 1:3 has been utilized to calculate the contribution of LDCF to this Outcome. The baseline is \$8.23 million, and the LDCF contribution is \$2.68 million.

91. LDCF also contribute US\$1 million to Outcome 1.3 and US\$0.5 million to Outcome 2.1. Under Outcome 1.3, LDCF funds are used to foster an innovative approach to increasing community resilience to climate change with the urban communities that are affected by the roads and the drainage. Without LDCF, this would not happen. LDCF contributes US\$ 1 million to this. The PVUDP project (through PVUDP Outputs 4 and 5) will also contribute an estimated \$4.5 million to this Outcome.

92. Outcome 2.1 is the necessary technical assistance and capacity development. In the baseline, there is technical assistance and capacity development under the PVUDP project. This does not however focus on climate change and climate resilience. LDCF funds will focus uniquely on technical assistance and capacity development for climate change and climate resilience. Overall investments in this Outcome are US\$2.5 million, with US\$ 0.5 million from LDCF and the remainder from PVUDP.

A.1.5 Adaptation Benefits

93. The baseline project is to contribute to the sustainable urban development of Port Vila (PVUDP) and to the development of the transport sector across Efate island. The PVUDP project outcome is the improvement of the infrastructure for Port Vila and the improvement of the mechanisms which are to assist the Government to efficiently manage its infrastructure. As all the residents of Port Vila use these roads at some stage, this will directly lead to social and economic benefits for all residents of Greater Port Vila – currently 58,000 but expected to rise rapidly in the coming decade. Further, the improved road network will lead to an improved tourism experience in the Greater Port Vila area, and is likely to lead to increased tourism and tourist-related activities, which, in turn, should lead to economic benefits to the residents.

94. However, climate change threatens to undermine the benefits associated with the PVUDP. In the baseline, the benefits of the PVUDP to the 58,000 Great Port Vila residents will not be realised. With the LDCF intervention, these benefits should be protected against climate change. Hence the 58,000 Great Port Vila residents all benefit from the LDCF intervention.

94a. Addressing poverty and marginalized groups: As the main focus of the PVUDP project is to reduce localized flooding, the main victims of which are the poor and marginalized communities in the less desirable parts of Port Vila. Hence, PVUDP is conceived to focus mostly on poor and marginalized groups. By reducing flooding and improving

local transport infrastructure, PVUDP will contribute to (i) increased access to social and economic services (ii) reduced health risks and (iii) improved livelihoods – primarily for the poor and marginalized groups.

95. The Emergency Assistance Project, with support from Outcome 2.1, will improve road transport across all of Efate island. All the island's population of approximately 78,000 [Endnote: Source: wikipedia] will benefit from this.

95a. EAP Project responds to a disaster that particularly impacted poor and vulnerable people. The destruction by Pam of critical infrastructure impacted many people, but vulnerable groups in particular. Such disaster events also create new vulnerabilities by impacting employment and livelihood-generating abilities, personal safety, public health and sanitation, household efficiency, and food production. During implementation, EAP's expected poverty and social benefits and impacts on local communities will be analyzed through review of previous social and poverty analysis and consultations with stakeholders under ongoing ADB financed projects. Repairs to roads and bridges will be prioritized to minimize secondary impacts on the economy, and to restore connectivity to essential services such as hospitals, schools, markets and main commercial centers in Port Vila. The detailed engineering designs will include measures to support the socially vulnerable including women, children, and the disabled and adopt a sustainable maintenance strategy while considering future traffic growth as well as climate and disaster risks.

A.1.6 Innovativeness, Sustainability and Potential for Scaling-Up

96. Innovativeness The principle innovative aspects of the Project are under Outcome 1.3, where the Project will develop community participation and community driven approaches to flood management and drainage maintenance. This is the first time for this to be attempted in urban areas in Vanuatu. Although similar approaches have been developed in rural areas, the structure of society is very different in urban areas and different methods are necessary. In essence, in an urban setting, the LDCF funds will be used to optimize the combination of infrastructure-based climate resilience (through improve engineering interventions) with community-based resilience. The lessons from this urban community participation will be of use to other urban areas in Vanuatu and also to other urban areas across the South Pacific islands.

97. From a technical and engineering perspective, the topography and geology in Vanuatu present unique challenges that can only be overcome through a judicious mixture of classical engineering interventions (channels, tunnels, etc) and more natural interventions (soakaways, increased infiltration and natural storage areas). The implementation of all these interventions measures should generate unique experience and knowledge that may be of use to other islands in the South Pacific with a similar topography and geology. This will be monitored and documented and will be used to generate knowledge.

Innovative 'Green' engineering solutions

97a. Green solutions (alongside hard infrastructure or "grey" solutions) are often highly cost-effective, generally win-win, and can help provide an additional buffer against extremes in climatic variability. Hence green solutions will be considered where possible.

97b. The PVUDP project takes place in a densely populated urban area. Most of the catchments are already built up. Hence the potential for green measures is limited. However, under Outcome 1.3 (Climate resilient, sustainable urban drainage implemented at urban sub-catchments), green and community oriented measures will be sought out and utilised where feasible. This will be undertaken on a sub-catchment by sub-catchment basis. The full potential of each sub-catchment is not known at the outset. Under Outcome 1.3, for each sub-catchment, green measures will be identified and supported. These may include (i) protection or restoration of small wetlands as natural storm-water storage areas and (ii) small scale tree planting, most likely on private land near flooding hotspots.

97c. EAP include rural areas, hence there may be more potential for green measures. These measures will be developed during the full design process.

97d. For both PVUDP and EAP, in the identification of potential green measures, lessons will be learnt from other GEF/ADB projects, notably the SCCF funded notably “Promoting Climate Resilient Infrastructure in Northern Mountain Provinces of Vietnam” (GEF ID: 3103). That project is under implementation and is starting to deliver lessons related to bio-engineering solutions to road instability.

98. Sustainability. Sustainability means (a) the infrastructure developed under the Project continues to be fit for purpose for at least 25 years and (b) the stakeholders of Vanuatu are sustainably enabled to design and operate additional infrastructure investments in the future.

99. With regards to (a), the Project will invest in developing the operations and maintenance systems and the related capacity (mostly financed by the PVUDP baseline project). This will include developing mechanisms to finance operations and maintenance. This capacity and these systems should ensure that the infrastructure is maintained. The benefits from the infrastructure (i.e. improved transport, fewer floods) will also be immediately appreciated by all stakeholders, and this should provide an incentive for sustainability and for financing. Finally, the development of community participation in the operations and maintenance should make the systems more sustainable.

100. With regards to (b) the Project will invest considerably in building the capacity of stakeholders in Vanuatu. This will include the capacity to plan, design and manage infrastructure investments, this will also include capacity to understand climate change and understand how to determine and assess adaptation options. The Project will also lend support to the development of essential regulations, standards and/or legislation. These efforts should ensure that the stakeholders of Vanuatu are enabled to design and operate additional infrastructure investments in the future.

101. Scaling up. The solutions and approaches to increasing climate resilience in urban areas in a small Pacific island setting are relevant to all urban areas across Vanuatu and across the South Pacific. The Project will directly and build capacity of MIPU, PWD, DLA, PVMC and Asset Operators, this will directly facilitate up-scaling across Port Vila and across other urban areas in Vanuatu.

102. The Project is connected to the Pacific Region Investment Facility - a multi-agency coordination mechanism aimed at improving the delivery of development assistance from donors and development partners to the infrastructure sector in the Pacific region (PRIF). The Project will share all knowledge that is gained through Project activities with PRIF. This will facilitate upscaling to relevant places across the Pacific.

A.2. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact.

103. This Project is one of five to be implemented under the LDCF Program “Climate Proofing Development in the Pacific”. The status of the five projects is presented in Table 10.

Table 10: Status of Projects under the “Climate Proofing Development in the Pacific” Program

Sub-Project	GEF allocation (US\$, excluding PPG)	Status
Sub-Project 1. Protecting coastal urban areas against the impacts of climate change in Vanuatu	5,650,000	Current proposal.
Sub-Project 2. Securing urban water supplies under climate change stress in Timor-Leste	3,000,000	Baseline project is being developed. The GEF component is likewise being developed.
Sub-Project 3. Up-scaling climate-proofing in the transport sector in	4,500,000	Approved and started.

Timor-Leste: Sector wide approaches		
Sub-Project 4. Infrastructure Prioritization, Planning and Budgeting for Adaptation in Tuvalu	500,000	Baseline project is being developed. The GEF component has been prepared.
Sub-Project 5. Cross-cutting learning, improved information, training and innovation	550,000	Subsequent to detailed discussions involving the GEF Secretariat, the GEF funding to this sub-project has been cancelled. The multi-country, cross-cutting activities under this component have been taken on under the South Pacific Regional Environment Programme (SPREP).

104. Hence this proposed Project is a central component of the overall Regional umbrella program. It will generate significant benefits in terms of adaptation to an important pacific island nation that is vulnerable to climate change. It will also generate significant knowledge and experience regarding adaptation to climate change that will be of use to many pacific island countries facing similar challenges.

A.3. *Stakeholders*. Elaborate on how the key stakeholders engagement, particularly with regard to [civil society](#) and [indigenous people](#), is factored in the preparation and implementation of the project.

105. The key stakeholders are the Public Works Department (PWD) of the Ministry of Infrastructure and Public Utilities (MIPU), the Port Vila Municipal Council (PVMC), the local community members in Port Vila, and the Department of Local Authorities of the Ministry of Interior (DLA). PWD, MIPU and PVMC will ensure the appropriate involvement of all stakeholders. ADB will support, as necessary, coordination with other international development partners

106. A full stakeholder analysis has been undertaken and the Project stakeholder plan is provided in Annex H, with a particular focus on the GEF/LDCF components. Annex H provides details as to how each stakeholder group is to fulfil its responsibilities vis-a-vis the project, and how each stakeholder group will benefit from the project.

107. Local community members in Port Vila will have an active role in many of the project activities, notably related to maintenance and operations, and localised flood management and disaster risk management. The Project is designed to ensure that local community members participate fully in the project, are engaged in the project, and feel committed to its success.

A.4. *Gender Considerations*. Elaborate on how gender considerations were mainstreamed into the project preparation, taking into account the differences, needs, roles and priorities of men and women.

108. Gender considerations have been addressed in an ongoing manner throughout the process to prepare the PVUDP and specifically the process to design the LDCF/GEF supported activities.

109. Initially, the project concept contained in the Port Vila Urban Development Project Master Plan (2010) contained a Gender Action Plan (see Annex I) which was based on considerable consultation and analysis. This Plan consists of 32 gender-oriented actions to be implemented across the 5 Outputs of the PVUDP. This Plan also identifies targets and responsible parties.

110. Subsequently, during the detailed PVUDP preparation phase, a thorough gender sensitive analysis was undertaken and gender-related consultation activities were held to prepare the detailed design of the PVUDP. A major component of this was the Gender Awareness Development activities, which were undertaken through the following five sub-activities: design and implement gender issues training related to sanitation and hygiene; consult stakeholders and establish gender-sensitive indicators; consult on the impacts of project activities on women's livelihoods; prepare a summary report on the consultation views expressed, and; incorporate the views of women into project output design

where possible. These gender assessment activities ensure that gender concerns are mainstreamed across the PVUDP project design [Endnote: See PVUDP Inception Report, January 2014]. During the assessments and consultations, women identified a preferences for the project to focus on the construction of roads and drainage systems and communal sanitation facilities in the urban and periurban settlements. In addition, specific requests were made for the use of community labour in the vicinity of villages along the roads, and employment during civil works (road repair activities) and ongoing maintenance. Women noted that tying gabion baskets, grass cutting, and clearing of vines and other vegetation were suitable activities for women. Youth and those that are currently unemployed or under-employed were suggested to be targeted first. Given this,. the project will seek to ensure fair employment (with a target of 20% of labourers being women) and fair wage rates will be paid for women in construction/repair and maintenance works. Facilities for female labor-based workers such as separate resting areas and portable sanitation facilities when working on various drainage construction sites will also be provided to support the work-force activities.

111. During PVUDP implementation, and in line with ADB rules and procedures, an integral part of the baseline will be the operationalization of the gender response strategy. This will notably be implemented through Output 4 of the PVUDP. During implementation, the main strategies are to include: (i) Gender Awareness and Consultation with Women's Groups; (ii) Training Programmes on Gender Issues such as Sanitation and Hygiene; and (iii) Gender-sensitive indicators Consultation with women's groups/associations. Specifically, activities are to focus on:

- Gathering evidence to use in determining priorities;
- Gathering evidence for the project's impact assessment process;
- Collecting feedback on the project's objectives;
- Improving ownership of gender equality objectives;
- Improving accountability of policy makers, service users, and the general public, and;
- Building a useful baseline for use in monitoring.

111a. The EAP project is an emergency response project and details of the gender approach will be developed during implementation. The Initial Poverty and Social Analysis indicated that damage to existing transport infrastructure resulting from the cyclone will have adverse effects on women. At the same time, equitable post-disaster recovery could help to reduce women's disadvantaged condition in Vanuatu and increase their overall resilience. In this sense it women as well as men must have access to reconstruction and rehabilitation jobs, as well as public works, investment funds, and income-generating projects, to support their long-term economic recovery. Hence, women will be encouraged to take up employment during project implementation (reconstruction). Equal wages for equal work will be paid to men and women engaged in the project. Various training and awareness activities will be undertaken, including: education awareness on HIV/AIDS and prevention (coordinated with HIV Coordinator of Ministry of Health); and awareness on gender sensitive transport and road safety issues. Gender specific outputs, targets and indicators will be integrated into the project's design and monitoring framework.

112. Gender specialists will be recruited as part of the implementation team as necessary to ensure this is implemented appropriately. Specifically, a "Social Development, Community Consultation and Gender Specialist" will be engaged to for the project design phase (5 person months input) and the construction phase (8 person months).

A.5 Risk. Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

113. Table 111 sets out the risks to the LDCF/GEF funds not being effective, and summarizes the measures being taken to mitigate these risks.

Table 11: Summarizing the Risks to Project Success and Mitigation Measures

Risk and Description	Impact & Probability ¹¹	Countermeasures/Management response
<p><i>The impacts of climate change at the scale relevant to these infrastructure projects are not adequately known or understood.</i></p> <p>The available data and available models make it very difficult to accurately predict climate change at the level of Port Vila and the impacts it will have. This is exacerbated by the complex topography and existing high climate variability. It is practically impossible with current knowledge to separate out climate change effects from other factors affecting the sustainability of the infrastructure.</p>	<p>I - 1 P - 4</p>	<p>The impacts of climate change are known at a general level in the region, and subsequent work by CSIRO (see Annex E) has sharpened the understanding at the local level.</p> <p>The best available models are to be used. Further, some project activities will contribute to increasing the understanding of climate change and its impacts on infrastructure. Finally, there are many ongoing activities to collect improved data and to improve measuring and modelling related to Vanuatu; this improved knowledge will be used as it becomes available.</p> <p>Also, the Project strategy focuses on 'no regret' and 'low regret' options, i.e. interventions that increase resilience to climate change <i>and</i> have other benefits (such as improved roads under the baseline scenario, and increased community and socio-economic benefits).</p>
<p><i>The current unplanned approach to urban development on Vanuatu means project impacts will be less than optimal, and possibly undermined, and replication will be difficult.</i></p> <p>There is very little long term or strategic planning in Port Vila or on Vanuatu, and this seems unlikely to change in the near future. Hence the project support to roads and drainage may be less than optimal in strategic terms.</p>	<p>I - 2 P - 3</p>	<p>Although planning is limited, many of the priorities to be addressed are very obvious, and the project addresses these. Moreover, the optimal approach to addressing these (i.e. no regrets and optimizing socio-economic benefits) is also clear in many cases.</p> <p>In the future, it is possible that ADB will support Port Vila Municipality to develop its urban planning and management capacity. Other international partners may do the same. The proposed project will monitor these developments. It will link into any related development, and help support them.</p>
<p><i>The low capacity and high workload of counterpart agencies leads to delays.</i></p> <p>The Vanuatu/Port Vila infrastructure development programme is ambitious and there are limited counterpart resources available for projects of this nature. It is noted that some delays were experienced during the PVUDP design phase.</p>	<p>I - 2 P - 3</p>	<p>ADB and DFAT are investing strongly in developing the capacity of MIPU and PWD. As this capacity develops, the MIPU/PWD should be increasingly able to take on tasks and provide increased leadership.</p> <p>The Government has established the VPMU as the project management and administrative agency. This specialised agency also relieves the MIPU/PWD of some of its burden over the short and middle term.</p>
<p><i>The weak enabling environment undermines efforts for sustainability and replication.</i></p> <p>The legal and regulatory framework, including standards, is far from complete. Moreover, institutional strengthening is incomplete. These gaps and weaknesses may make it more difficult for the project to have sustained impacts.</p>	<p>I - 3 P - 2</p>	<p>Firstly, the project focusses on investments that can and will have an immediate impact. Hence impacts will be delivered. Moreover, these broad impacts and rapid successes should facilitate sustainability and replicability.</p> <p>In addition, the project will work, to the extent possible, on the institutional, legal and regulatory framework. Hence the project will help strengthen the enabling environment to some extent, notably through Component 2.</p>
<p><i>Inadequate monitoring and maintenance of the infrastructure.</i></p> <p>Various studies show that road deterioration and</p>	<p>I - 4 P - 1</p>	<p>The investment in the \$47 million baseline projects is accompanied by major efforts to install monitoring and maintenance capacity. This is in conjunction with efforts by other projects and international partners to strengthen</p>

¹¹ Range 1-5, where 5 is highest.

damage can often be avoided by regular maintenance, but this is often challenging in countries with low capacity.		monitoring and maintenance capacity.
<p><i>The costs of adapting to climate change are prohibitive.</i></p> <p>This has been shown to be likely for many roads in the Pacific, where climate variability and climate change lead to very high costs. Intense climate variability leads to a great stress on physical infrastructure.</p>	<p><i>I – 4</i> <i>P -1</i></p>	<p>The analysis undertaken during the feasibility and design stage suggest that the amounts invested through this project, although not sufficient to remove all risks associated with climate change, will reduce risks to acceptable and manageable levels, and significantly increase resilience.</p> <p>To some extent the design parameters may be amended, meaning the infrastructure will be designed to cope with climatic events of greater frequency than infrastructure projects in other parts of the world, but still acceptable in both social and economic terms.</p>
<p><i>Delays in the baseline investment project mean GEF funded activities either cannot take place or are less effective.</i></p> <p>There is a possibility of delays in the baseline investment.</p>	<p><i>I - 1</i> <i>P- 3</i></p>	<p>The use of GEF funds are designed to be able to proceed on some activities even if the baseline investment is delayed.</p> <p>It is only if the baseline delays become extreme (say more than 2 years) that this will affect the effectiveness of the use of the GEF funds. This length of delay is unlikely.</p>

A.6. Institutional Arrangement and Coordination. Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

Institutional arrangements

114. The Project Implementation Arrangements for LDCF funds are as for the baseline investments in the PVUDP project and Emergency Assistance Project.

115. In ADB terminology, the project executing agency (EA) is the Ministry of Finance and Economic Management (MFEM). The EA is responsible for all interactions with the ADB, for ultimate reporting, and for ensuring government counterparts funds are provided.

116. In ADB terminology, the Ministry of Infrastructure and Public Utilities/Public Works Department (MIPU/PWD) and Department of Environmental Protection and Conservation (DEPC) are the implementing agencies for the PVUDP project. MIPU is the implementing agency for the Emergency Assistance Project. MIPU/PWD will be implementing agency for all activities supported with GEF/LDCF funds. As such, MIPU/PWD is responsible for due diligence and quality assurance, and for providing technical inputs and guidance.

117. The Vanuatu Project Management Unit (VPMU) of the Prime Minister's Office, established through a Council of Ministers resolution on 1 November 2010, is responsible for the day-to-day management of the PVUDP, including Contract management, project progress monitoring and reporting, financial report, and public awareness. The VPMU was established as a dedicated unit for managing large and nationally significant projects. It is supported by a direct government budget allocation and core staff. The Director of VPMU will be responsible for day to day management of this project, supported by VPMU staff, project consultants and the implementing agencies.

118. The existing VPMU Steering Committee (VSC) will provide multi-agency guidance and direction for the Project and assist coordination with other government departments and agencies. The responsibilities and the composition of the VSC are described in the Vanuatu Project Management Unit (VPMU) Charter, as amended in September 2013.

119. VPMU also serves as the secretariat to the VPMU Steering Committee.

120. ADB staff are responsible to support implementation, including compliance by MFEM, MIPU/PWD and DEPC with their obligations and responsibilities for Project implementation in accordance with ADB's policies and procedures.

121. In line with the baseline investment projects, as the key government agency, the Ministry of Infrastructure and Public Utilities (through its Public Works Department) is responsible for:

- due diligence and quality assurance of detailed engineering design and documentation (DEDDE) outputs;
- provision of technical inputs and support to VPMU during design and construction to ensure assets delivered through the Project, which may include roads, drainage, sanitation and hygiene facilities, to be operated by the Ministry of Infrastructure and Public Utilities (through the Public Works Department) or requiring Ministry of Infrastructure and Public Utilities (through the Public Works Department) approvals meet the required standards of the Government of Vanuatu; and,
- operations and maintenance of roads and drainage assets delivered through the project.

Coordination arrangements

122. Coordination with related initiatives will be assured through the assistance of the ADB, the VSC and the National Advisory Board on Climate Change and Disaster Risk Reduction (NAB). The ADB will take the lead in ensuring coordination with related international initiatives. The VSC will ensure coordination with related urban development and road infrastructure projects. The NAB will ensure coordination with related climate change initiatives. In terms of membership, there is a considerable degree of commonality between the members of the VSC and NAB, and both are overseen and strongly supported by the Council of Ministers (by whose Orders they were both recently established).

123. The VSC, notably, will be in a position to facilitate coordination with the following urban and road transport projects:

- MDRR, R4D, CRRS (see Section 1.2 above);
- The Vanuatu Tourism Infrastructure Project (VTIP) (also known as the "Beautification" project). This is funded by the New Zealand Government and is implemented through the Department of Tourism. This project aims to improve the quality of the experience for tourist visitors and to provide a functional safe and attractive Portside and Seafront Precincts for tourists and locals to enjoy. Some VTIP port side proposals have a direct impact on the PVUDP scope of works. They involve improvements to the road and turn around for vehicles at the port gates, footpaths, seats, shelter buildings, taxi/bus pick up points and a road side fence to provide enhanced safety from rockfalls;
- The Vanuatu Traffic and Pedestrian Management Plan (VTPMP), also funded by the New Zealand Government. This will identify and implement specific traffic infrastructure and management enhancements within the Seafront and Port Side precincts of Port Vila and the CBD. This Plan will inform the PVUDP. Within the wider Port Vila area, this project will implement some short term projects to improve safety and efficiency for both tourists and locals. The VTPMP scope provides a higher level strategic overview on how the current and anticipated future roadway network is to operate within Port Vila.
- The Development of Vanuatu Infrastructure Regulations (funded by Australian government) is a Technical Assistance project providing recommendations to the State Law Office related to the drafting or updating of the Roads Act, Building Code Act, and Traffic Management Act. The proposed Acts will be very relevant to the PVUDP, particularly the planning and construction phases and later the operation, maintenance, and capacity building components.
- The Vanuatu Interisland Shipping Support Project (VISSP) funded by the ADB and the New Zealand Government. This commenced in early 2013. This will lead to a new domestic wharf at South Paray Bay in Port Vila with access from the wharf road. Major construction activities are ongoing during 2014 and 2015. VISSP is managed by the VPMU.

- The Lapetasi International Multipurpose Wharf near Port Vila funded by JAICA. This will involve major construction activities from 2014 to 2016. This is also managed by the VPMU.

124. The NAP, notably, will be in a position to facilitate coordination with the following climate change and LDCF Projects that recently started up in Vanuatu:

- Increasing Resilience to Climate Change and Natural Hazards Project (World Bank, total budget: \$11.52 million, LDCF Contribution \$6 million, started in 2013). The objective of the project is to help increase the resilience of communities in Vanuatu to the impacts of climate variability and change and natural hazards on food and water security as well as livelihoods. The first component of the project is institutional strengthening for climate change adaptation and disaster risk management. The second component of the project is increasing community resilience on active volcanic islands and in coastal areas. The third component of the project is promotion of improved technologies for food crop production and resilience to climate change. The fourth component of the project is rural water security. On-the ground activities take place through all components. The focus of on-the-ground activities is the rural areas of Vanuatu, and hence this complements (rather than duplicates) the current proposed project. The World Bank is also helping to develop island and city disaster risk management (DRM) plans and early warning systems (EWS);
- Adaptation to Climate Change in the Coastal Zone in Vanuatu (UNDP, total budget: \$39 million, LDCF Contribution \$8.03 million, starting up in 2015, first quarter). 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. The project will achieve this objective through four components, i.e.: Component 1: Integrated community approaches to climate change adaptation developed and implemented through; Component 2: Information and early warning systems on coastal hazards; Component 3: Climate Change Governance and; Component 4: Knowledge management. Component 1 of this project, through which most on-the-ground investments take place, focusses on rural areas, and hence complements (rather than duplicates) the current proposed project. Components 2 – 4 also complement the current proposed project as they contribute to capacity building at the national level.

125. It is noted that the above two LDCF projects focus on rural areas. Hence, the current proposed Project, by focusing mostly on urban areas, will effectively complement them.

Additional Information not well elaborated at PIF Stage:

A.7 Benefits. Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

126. The PVUDP Project will improve drainage, roads and sanitation systems in the greater Port Vila municipality and adjacent urban and peri-urban areas. This will provide improved access to affordable, sustainable, and effective sanitation, roads and storm water drainage services. This will effectively and greatly contribute to climate-resilient urban development in and around Port Vila. It is anticipated that all of Port Vila's residents will benefit, an estimated 58,000 residents in 2009 and likely to reach 109,000 by 2025. In addition, Port Vila's many visitors (tourists) will benefit from the increased urban conditions and access.

127. The PVUDP Design and Monitoring Framework includes the following socio-economic indicators and targets:

- Number of traffic accidents annually (target: to reduce by 20% from 238 by end 2018);
- Number of accidents involving pedestrians (target: reduce by XX% from 18 by end of 2018 – being established);
- Average network speed at peak periods (target: increase from XX km/h to YY km/h – being established);
- Minor roads will have flooding immunity of two year return storms;
Major roads will have flooding immunity of five year return storms by Q4 2016 in Port Vila;
- Pollution in the harbor from bacterial contamination from the hospital and markets (target: reduce to 0);

- Contamination reduced in Teouma River from (a) 300 count per 100 ml of E.coli and (b) 300 count per 100 ml of Coliform in June 2014 to XX by Q1 2016;
- Incidence of diarrhea, malaria and other water borne diseases in target settlements in Port Vila (disaggregated by gender and physical ability) (target: reduce by XX% – being established); and
- Number of government staff (disaggregated by gender) experience training and display application of the knowledge gained (target: being established).

128. Hence there are clear and significant socio-economic benefits from the PVUDP project. The GEF/LDCF component contributes to these, notably by climate proofing the gains under the PVUDP project.

129. In addition, in the target sub-catchments under (Outcomes 1.3 and 2.1), the GEF/LDCF will contribute to improving overall resilience to climate change and increasing climate change adaptation capacity. The entire population in these sub-catchments (approximately 4-6,000 persons) will benefit from (i) increased organizational capacity and (ii) increased engagement in the development and maintenance of public works and roads and drainage.

130. Without the PVUDP project, the regular (i.e. often more than ten times per year) flooding leads to great disruption in socio-economic activities. With PVUDP and LDCF support, there will be a great decrease in flooding and this will lead directly to socio-economic benefits to the population in the target-sub-catchment. This will include (but not be limited to): (i) less disruption of school attendance; (ii) less disruption of all economic activities such as market sales, accessing markets, local enterprise activities, gardening, and local construction activities; (iii) less disruption of access to health care and clinic; and (iv) less disruption of personal activities such as washing, attending to children and to the elderly.

131. Finally, the Emergency Assistance Project will benefit the entire population of Efate, currently estimated at 66,000.

Cost Effectiveness

131a. Full details on beneficiaries of the two baseline projects are included in the concerned project documents. It is not possible to separate out the benefits from the GEF components as this is an integral part of the overall baseline Projects.

131b. For PVUDP: The project is designed to contribute to poverty reduction and socioeconomic development by improving urban infrastructure such as sanitation, roads, drainage, public toilets, and bathing facilities along with associated community hygiene capacity development (the GEF Component focuses only on roads and drainage). The project will therefore improve health status and access to social services for the all the population, including the disadvantaged such as people living in settlement communities, women, and people with disabilities. Overall, all of Port Vila's population of some 55,000 will benefit to some extent.

131c. The economic internal rate of return (EIRR) was estimated as 23.4%. Sensitivity analyses for the individual outputs and the overall project indicate the EIRRs are robust. There are also significant anticipated non-quantifiable benefits such as improved living conditions and better environment, plus multiplier effects, particularly from the likely increase in the demand for services by tourists and inward investment as core infrastructure and amenities in the capital are improved.

131d. During the design process, various alternative drainage systems were considered (e.g. including tunnels to neighboring catchments, and extensive use of soakaway chambers) but these were discounted due to either the greatly increased cost or the decreased performance.

131e. Finally, towards the end of the Project design, a major value engineering exercise was undertaken to ensure optimal returns from the investment. This led to the selection of the road stretches to be upgraded and technology to be used based on maximizing benefits to people and ensuring the lowest cost for a 'fit for purpose' transport infrastructure.

131f. For EAP: The overall objective of the Project is the “accelerated economic and social recovery in Vanuatu’s Cyclone Pam affected provinces”. The Project will contribute to reversing an anticipated decline in GDP of between 1.4 - 4.6% to an increase in GDP of 3.6 %. Specifically, the EAP focusses on poor and marginalized regions. Notably, the Efate ring road provides transportation services to about 29,150 rural and 55,525 urban people. It provides increased access to and improved quality of network thereby reduced vehicle operating costs, reduced travel time, and improved reliability of access to social services. The improved road will therefore contribute to efforts to reduce poverty and increase incomes in rural areas by stimulating economic activity in the tourism, local business development and agricultural economic activities.

A.8 Knowledge Management. Elaborate on the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user-friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. participate in community of practices, organize seminars, trainings and conferences) with relevant stakeholders.

132. Output 1.3.5 under Component 1 will focus on knowledge management. This will ensure there is a constant and continuous monitoring of the Project activities but also of the climate, climate impacts and climate resilience of the roads and drainage network. This monitoring will be an integral part of the standard project monitoring and supervision procedures of VPMU and PWD.

133. Activities may include:

- Collecting information on weather and extreme weather events;
- Collecting and documenting information on climate related damage to the drains and roads in Port Vila;
- Collecting and documenting information on the impact of flash floods on the people, lives, livelihoods and infrastructure of Port Vila;
- Observation of the differentiated impacts of extreme weather events and assessing how the measures taken by the Project have assisted, or otherwise, adaptation to climate change. This may include the analysis of all available data to determine (i) costs of climate related damage; (ii) relationship between extreme weather and damage; (iii) the geographical location of points that are not climate proofed; and (iv) the technical and cost effectiveness of adaptation measures taken along the road;
- Publishing a lessons learnt document.

134. The VPMU and PWD will take the lead in the above knowledge management activities.

135. This Project is also part of the regional Climate Proofing Development in the Pacific Programme. As such, the Project will be connected to processes and projects across the Pacific islands that are addressing similar challenges. These connections and knowledge flows will be facilitated by the Pacific Region Infrastructure Facility (PRIF). PRIF is a multi-partner infrastructure coordination and financing mechanism. It is supported by ADB and the Government of Australia. The PRIF provides a channel for greater access to sector experts and for learning across sectors and countries.

136. Further, three ADB regional Technical Assistance projects are expected to directly support a regional approach to NAPA implementation and so facilitate knowledge sharing. These are: (i) Strengthening Governance and Accountability in Pacific Island Countries, Phase II, which will provide sub-regional audit support to public auditing in Kiribati, Nauru, and Tuvalu; (ii) Pacific Economic Management to support countries in addressing the impacts of the global financial and economic crisis; and (iii) Strengthening Capacity of Pacific Developing Countries in Climate Change.

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 Consistency with National Priorities. Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.:

137. The Project responds directly to national priorities as set out in various policy documents, including:

- the Priorities and Action Agenda (PAA) 2006-2015;
- the Plan Long Act Short (PLAS) 2013-2016;
- the MIPU Corporate Plan 2013-2016, and;
- the MIPU Sector Strategy “Yumi Pul Long Wan Rop” (2013)
- The (draft) Post Disaster Needs Assessment (2015).

138. Each of the above policy documents sets out the importance of an efficient, reliable and resilient road infrastructure network in Vanuatu and Port Vila, to which this Project is making a direct contribution.

139. The principal development policy document in Vanuatu over the past decade has been the Priorities and Action Agenda, 2006-2015 (PAA). The PAA establishes sustainable urban development through improved access to basic services such as sanitation and drainage facilities and urban infrastructure as an overriding national priority. The relevant section of the PAA notes that: “Reliable and competitively priced economic infrastructure and utilities are essential services needed to support national development...[but]...poor transport and communication services, their high costs, and poor maintenance of infrastructure assets, particularly (but not only) in rural areas, have been identified as major constraints to development”.

140. Specifically with regards to adapting to climate change, the government of Vanuatu completed its National Adaptation Plan of Action (NAPA) in 2007. This proposed Project contributes specifically to addressing the following priorities identified in the NAPA:

- Priority #2. Water management policies/programmes (including rainwater harvesting) - reducing vulnerability to the anticipated impacts from climate change on the country's water resources. Within Port Vila the Project will strengthen water management capacity and will contribute to efforts to create and manage reservoirs. The Project will notably contribute to the management capacity of the municipal managers, thereby indirectly contributing to water use management and increased water use efficiency;
- Priority #5. Mainstream climate change considerations into infrastructure design and planning. The principal objective and strategy of this proposed Project is to mainstream climate change considerations into urban infrastructure, particularly road and drainage networks.

140a. Finally, the PVUDP project follows on from a thorough planning exercise, supported by ADB and implemented by the Government of Vanuatu, which led to the Port Vila Urban Development Project Master Plan (PVUDPMP). Hence the PVUDP is based on a rational, participatory study and is aligned to priorities and needs.

140b. Likewise, the EAP followed on from the Post Disaster Needs Assessment after Cyclone PAM – led by the Government of Vanuatu and supported by the donor community. The aim of the PDNA was to identify national priorities. Hence, EAP is fully in line with priorities and needs.

C. DESCRIBE THE BUDGETED M & E PLAN:

141. The VPMU will be responsible for monitoring of Project activities. This will be fully integrated into the monitoring of the baseline projects and the other projects monitored by VPMU. VPMU has significant experience monitoring such projects and the required resources.

142. Within the framework of the regional programme (Climate Proofing Development in the Pacific), a separate mid-term and final evaluation will be undertaken for this project. The mid-term evaluation will take place during the

first two years and will be designed to identify gaps and constraints which can be addressed during the remainder of the program time-frame.

143. The M&E plan is consistent with GEF policies. The M&E plan will be reviewed and revised as necessary at Project inception and a Project supervision plan will be developed at this stage. The focus of monitoring will be on Outcomes, but financial and implementation monitoring will also be covered.

144. A summary of the envisaged M&E activities is provided in Table 12. The total additional cost of monitoring the LDCF funded activities is at most \$56,000, as most costs are integrated into the PVUDP management and monitoring costs.

Table 12: M&E Activities and costs

M&E Activity	Responsible Party	Cost (excluding time of project team)	Time frame
Inception workshop	• ADB, MIPU, VPMU	6,000	Within 3 months of project start-up
Project Implementation Reviews	• ADB, VPS, MIPU, VPMU	- (costs covered by VPMU as part of PVUDP activities)	Annually
Periodic Status and/or Progress Reports	• VPMU	- (costs covered by VPMU as part of PVUDP activities)	Quarterly
Mid-Term Evaluation	• ADB, MIPU • Consultants	20,000	Once, approximately 2 years after project start-up
Final Evaluation	• ADB, MIPU • Consultants	30,000	Within 3 months of project completion
Project Terminal Report	• ADB	- - (costs covered by ADB as part of PVUDP closure activities)	Within 3 months of project completion
Total indicative cost		56,000	

LDCF Indicators and Targets

1. The LDCF/SCCF Adaptation Monitoring and Assessment Tool (AMAT) will be used to monitor the Project's contribution to the global LDCF objectives and strategies. This will be used at Project start-up, at mid-term and at project-end, in line with GEF procedures. The Indicators selected for monitoring are provided in Table 13.

Table 13: AMAT Indicators and targets

LDCF Outcome/Output	Pertinent Indicator ¹²	Baseline/End-project target
1.1 Mainstreamed adaptation in broader development frameworks at the country level and in targeted vulnerable areas.	1.1.2 Adaptation actions implemented in national/sub-regional development frameworks.	0/ Climate change adaptation appears in Road standards, Road guidelines, or building code, or urban planning codes, or similar regulations.
1.1.1 Adaptation measures and	1.1.1.1 Development frameworks	0/


¹² Taken from AMAT

necessary budget allocations included in relevant framework.	that include specific budgets for adaptation actions.	Sectoral planning in the transport sector and/or the urban sector has clear assessments of the costs of adapting to climate change and clear targets for mobilizing the necessary funds for adapting.
1.2 Reduced vulnerability to climate change in development sectors	1.2.15 Length of national level roads that are resilient to climate change (km)	0km /30km (including PVUDP and Efate Ring Road)
1.2.1 Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability	1.2.1.2 Resilient infrastructure measures introduced to prevent economic losses.	Drainage measures on the concerned urban roads in Port Vila: 0km/30km). (including PVUDP and Efate Ring Road)
2.1 Increased knowledge and understanding of climate variability and change induced threats at country level and in vulnerable areas	2.1.1 Relevant risk information disseminated to stakeholders	Relevant information to be disseminated to stakeholders by end-of-project-target
2.1.1 Risk and vulnerability assessments conducted and updated	2.1.1.2 Risk and vulnerability assessments conducted	Risk and vulnerability assessments to be undertaken by end-of-project-target

PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)

A. GEF Agency(ies) certification

This request has been prepared in accordance with GEF policies¹³ and procedures and meets the GEF criteria for CEO endorsement under GEF-6.

Agency Coordinator, Agency Name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Mr. Nessim Ahmad, Deputy Director General concurrently Chief Compliance Officer, Sustainable Development and Climate Change Department (SDCC), Asian Development Bank		10/08/2015	Stephen Blaik Principal Urban Development Specialist Pacific regional Department	+6326326738	sblaik@adb.org

¹³ GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF
GEF6 CEO Endorsement /Approval Template-April2015

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

The Design and Monitoring Framework was first presented in the Report and Recommendations to the President (ADB, 2015). A modified version was presented and approved in the “Port Vila Urban Development Project Quarterly Report No 1” (March 2014). This modified version is presented below.

Project Design and Monitoring Framework

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Improved quality of life in Port Vila	Rise in Self-Anchoring Striving Scale for satisfaction, decrease in stress levels & happiness (max. points 10 & currently around 6) disaggregated by gender and by physical ability	Alternative indicators of well-being for Melanesia: Vanuatu Pilot Study Report 2012. Subjective well being indicators. Study to be repeated in 2015 & 2020 by VNSO & Melanesian Spearhead Group	Assumptions Port Vila experiences satisfactory progress in other social & economic spheres. Cyclones and natural disasters do not have any long-lasting effects on Port Vila. Risk The government is unable to provide in its national budget the required funds for the delivery of basic services. Public services cannot sustain demand from rapid population growth.
Outcome The Government is able to reduce flooding in Port Vila, operate a safer	The number of traffic accidents is reduced by 20% (tbc by March 2013) by end 2018.	Accident Occurrence Register kept by Traffic Police Unit, Port Vila	Assumptions Government is committed to provide budget for O&M of project assets.

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
and less congested road network, improve health and hygiene of inhabitants and reduce the level of pollution in the harbour.	<p>The number of accidents involving pedestrians reduced by XX% (tbc by March 2013) by end of 2018</p> <p>The average network speed at peak periods increases from XX km/h to YY km/h (figures and reference points tbc by March 2013) by Q1 2016.</p> <p>The probability of flooding reduces to less than 50% in any one year by Q4 2016</p> <p>Pollution in the harbour from bacterial contamination from the hospital and markets reduces to 0. Reduced contamination in Teouma River. (Baseline figures to be available after sample testing to be done in Q2 2014)</p> <p>Incidence of diarrhoea, malaria and other water borne diseases in target settlements in Port Vila reduced by XX% by end of project (disaggregated by gender and physical ability)</p> <p>XX% of government staff, disaggregated by gender, display application of knowledge gained through training</p>	<p>Journey time surveys of local road network in Feb 2014 and then Q1 2016</p> <p>Reported incidents of flooding</p> <p>Coliform and E. Coli Bacteria counts. Testing conducted by Department of Geology, Mines and Water Resources</p> <p>Demographic & Health Survey (2014 & possibly 2018),</p> <p>Monthly reports of Malaria Information System Report by National Malaria</p>	<p>Drainage & sanitation facilities are adequately climate-proofed.</p> <p>Solid wastes are adequately managed.</p> <p>There is proper coordination among concerned government departments & roles clearly delineated on project implementation.</p> <p>Relevant institutions are adequately staffed & equipped with required expertise.</p> <p>Climate change does not bring extreme weather conditions.</p> <p>Government enacts legislation to implement proposals in Traffic Management Plan.</p> <p>All drains including soakaways cleared at least twice per year (i.e. prior to & after rain season).</p> <p>Risks</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
2. Improved sanitation system in greater Port Vila	By mid 2017: 2.1 All (domestic & commercial) sludge in Port Vila is safely treated and disposed of.	Reports of PVMC Case studies by PVUDP's M&E	affordable and will be used VPMU has ability to operate and be fully funded.
3. Central area and settlement communities use improved hygiene facilities.	3.1 10 multipurpose community sanitation & hygiene facilities operational by Q1 2016, with the majority operated by women's groups. 3.2 4 public toilet facilities refurbished & operational by Q1 2016 with access for women, children & the disabled 3.3 XX number of Port Vila inhabitants, disaggregated by gender & by physical ability, engaged in health & hygiene awareness campaigns, with XX% demonstrating improved hygiene practices	Contractors' reports Quarterly reports of partner NGO <ul style="list-style-type: none">KAP surveys MOUs between PVMC and community groups	Risks Government departments are unable to provide relevant staff for trainings. Staff is unable to dedicate themselves fully to the training Delay in procurement due to lack of capacity
4. Government agencies and community and user organizations have the capacity to manage sanitation, roads and drainage systems effectively and efficiently.	4.1 XX government staff, disaggregated by gender, improve their skills and knowledge in maintenance supervision of sanitation, roads and drainage systems, safeguard measures, and contract management. 4.2 XX women and youth are trained in management of sanitation and hygiene facilities and maintenance activities. 4.3 100% of community sanitation facilities comply with sanitation standards at anytime	Training reports of institutional development specialist <ul style="list-style-type: none">Pre and post-training competency assessment questionnaires Quarterly reports of partner NGO <ul style="list-style-type: none">KAP surveysObservations	Without proper maintenance, drainage network will become defunct

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
5. Efficient project management services are provided.	5.1 Project is implemented on time and within budget, and in compliance with ADB guidelines.	Quarterly and annual reports of DSCD consultants and monitoring reports of ADB	

Activities with Milestones	Inputs
<p>1.1 Undertake topographical survey and geo tech survey and testing. (by Q1 2014)</p> <p>1.2 Undertake detailed design of roads, their pavement and pedestrianisation. (by Q2 2014)</p> <p>1.3 Undertake drainage and tunnel design, and environmental review of design. (by Q2 2014)</p> <p>1.4 Prepare drawings, BoQs, estimates, specifications and bidding documents. (by Q2 2014)</p> <p>1.5 Surface/reconstruct roads, curbs, intersections, footpaths, and road features, street lighting. (by Q3 2016)</p> <p>1.6 Construct new storm water drainage systems in the highest priority flood-prone areas together with new channels. (by Q3 2016)</p> <p>1.7 Purchase new road sweeper and gully emptier</p> <p>1.8 Undertake data collection and analysis of traffic volume, composition, projections and problems (by Q1 2014)</p> <p>1.9 Develop Greater Port Vila Traffic and Pedestrian Management Plan (by Q2 2014)</p> <p>2.1 Identify location of sludge treatment facility.</p> <p>2.2 Evaluate options for procurement of sludge treatment facility and operation of plant following commissioning.</p> <p>2.3 Design and construct a sludge treatment and disposal facility. (by Q4 2015)</p> <p>2.4 Draft operational procedures in the removal, transport, and treatment of sludge from septic tanks to the sludge treatment and disposal facility. (by Q2 2015)</p> <p>2.5 Develop operational guidelines based on sustainable drainage systems (SUDS) principles and techniques. (by Q4 2016)</p> <p>2.6 Construct new wastewater treatment facilities for markets and hospital if necessary. (by Q4 2015)</p>	<ul style="list-style-type: none"> • ADB: \$5.00 million • GoV: \$3.10 million • CFA: \$5.39 million • Government of Australia project grant: A\$25.61 million

Activities with Milestones	Inputs
<p>3.1 Conduct a survey of areas that need improved hygiene facilities. (by Q1 2014)</p> <p>3.2 Consult women's groups on site selection and design of sanitation facilities and maintenance activities. (by Q1 2014)</p> <p>3.3 Construct 10 multipurpose, multi-user sanitation facilities (toilet, washing and bathing facilities) in identified villages and periurban settlements. (by Q4 2015)</p> <p>3.4 Upgrade, rebuild, or refurbish 4 existing public toilets in the city center and those frequented by tourists. (by Q5 2015)</p> <p>3.5 Develop approach and methodology on awareness raising, information dissemination, and education related to health and hygiene via NGOs. (by Q2 2014)</p> <p>3.6 Conduct health and hygiene awareness and education programme (by Q3 2014)</p> <p>4.1 Conduct needs assessment for capacity building programmes for government stakeholders i.e. PWD, MIPU and DEPC. (by Q1 2015)</p> <p>4.2 Design formal and inservice trainings in road, drainage and sanitation system maintenance, outsourcing and contract management for government stakeholders (including monitoring and evaluation, design standards, design & quality control of works) and including awareness raising on the various acts and policies in force (by Q1 2015)</p> <p>4.3 Implement trainings for government stakeholders on above mentioned subjects (by Q2 2015)</p> <p>4.4 Train VPMU and sub-project staff in design and implementation of safeguard measures including implementation of Environmental Management Plans (EMP) and Resettlement Plans (RPs) (by Q2 2015)</p> <p>4.5 Design trainings and awareness raising activities for civil society in hygiene and sanitation (including gender issues related to this), construction, management and maintenance of household and communal sanitation facilities. (by Q1 2015)</p> <p>4.6 Implement trainings for civil society in above mentioned subjects (by Q2 2015)</p> <p>4.7 Support DEPC to (i) initiate policy discussions and dialogues with user groups with respect to treatment of wastes; (ii) establish strong partnerships with the business community; and (iii) oversee follow through activities to ensure early compliance to appropriate disposal and treatment of wastes. (by Q2 2015)</p> <p>4.8 Develop mechanisms for private sector participation in the O&M of sanitation and hygiene facilities. (by Q2 2015)</p>	

Activities with Milestones	Inputs
<p>4.9 Develop appropriate fiscal options and revenue collection system for project-established roads, drainage, sanitation, and hygiene facilities. (by Q2 2015)</p> <p>5.1 Provide timely progress reports until completion of the project. (until Q1 2018)</p> <p>5.2 Develop and implement a Performance Based M&E and gender-sensitive project management framework. (by Q1 2014)</p> <p>5.3 Design and prepare of bid documents, procurement and supervision contracts</p> <p>5.4 Assistance in implementation of gender action plan. (until Q1 2018)</p> <p>5.5 Procure goods, works & services as per ADB guidelines</p> <p>5.6 Undertake contract supervision, monitor engineering conformance, quality control of equipment, works and materials, monitor safeguards including implementation of environmental management plan</p> <p>5.7 Ensure compliance of contractors and consultants with ADB safeguard policies</p> <p>5.8 Provide training and advisory services on project administration.</p>	

A2: the Results Framework for the GEF/LDCF supported interventions.

Result	Alignment/contribution to PVUDP Design and Monitoring Framework	LDCF Adaptation Monitoring and Assessment Tool (AMAT) Indicators (see Part B, Section 10)
Objective: To reduce vulnerability and increase resilience to climate change hazards in urban areas in Vanuatu		
Outcome 1.1 The urban road infrastructure is climate proofed	Contributes to PVUDP Output 1 (The Government has improved the road network and drainage system in greater Port Vila)	1.2.15 Length of national level roads that are resilient to climate change (km) 1.2.1.2 Resilient infrastructure measures introduced to prevent economic losses.
Outputs: 1.1.1: 17.45 km of drainage and 25.11 km of urban roads are designed, constructed and managed in a manner resilient to the two-year return period flash-flooding.		
Outcome 1.2 Climate resilience integrated into post-Pam cyclone recovery efforts.	Not applicable. Contributes to the response to the Post Disaster Needs Assessment (post tropical cyclone Pam).	1.2.15 Length of national level roads that are resilient to climate change (km) 1.2.1.2 Resilient infrastructure measures introduced to prevent economic losses.
Outputs: 1.2.1: the Efate Ring Road is built back and managed in a manner resilient to climate change.		
Outcome 1.3 Climate resilient, sustainable urban drainage implemented at urban sub-catchments.	Contributes to PVUDP Output 4 (Government agencies and community and user organizations have the capacity to effectively and efficiently manage sanitation, roads and drainage systems) and Output 5 (Efficient project management services are provided)	2.1.1 Relevant risk information disseminated to stakeholders
Outputs: 1.3.1: Two priority sub-catchments selected;		

1.3.2: Two sub-catchment level action plans; 1.3.3: Priority measures to ensure the urban communities can cope with floods are implemented; 1.3.4: Priority off the right-of-way measures to reduce floods are implemented with the participation of the urban communities; 1.3.5: Knowledge management.		
Outcome 2.1 Technical assistance provided and capacity developed.	Contributes to PVUDP Output 4 (Government agencies and community and user organizations have the capacity to effectively and efficiently manage sanitation, roads and drainage systems) and Output 5 (Efficient project management services are provided)	1.1.2 Adaptation actions implemented in national/sub-regional development frameworks. 1.1.1.1 Development frameworks that include specific budgets for adaptation actions. 2.1.1 Relevant risk information disseminated to stakeholders 2.1.1.2 Risk and vulnerability assessments conducted
Outputs: 2.1.1: Climate Resilient Urban Road Standards/Guidelines; 2.1.2: Port Vila Disaster Risk Management Plan; 2.1.3: A cadre of trained and capable personnel in the potential Asset Operators; 2.1.4: A cadre of trained and capable personnel in the private sector consulting companies who may be involved in future construction/operation/maintenance of climate vulnerable infrastructure; 2.1.5: Climate resilient building codes and related regulatory support.		

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Note: The following comments pertain to the overall program, and not uniquely to the Vanuatu Project. Most comments are not pertinent to Vanuatu.

Review Criteria	Questions	GEF Secretariat Comment at PIF (PFD) / Work Program Inclusion	Response
Agency's Comparative Advantage	5. Does the project fit into the Agency's program and staff capacity in the country?	Please provide information on staff capacity of the offices especially Timor Leste or others that will be directly linked to the program.	<p>TIM: ADB's Special Office in Timor-Leste (SOTL) has an officer dedicated to the water sector who will be supporting the government in implementing the project. The main implementing agency will be the National Directorate for Water Supply. It has been implementing the Dili Urban Water Supply Sector Project and is just about to start implementing the District Capitals Water Supply Project. The Second District Capitals Water Supply Project will be its third ADB-financed urban water sector project. The capacity of the directorate in water management and service delivery is being built through a technical assistance, which will commence in August 2012. The directorate's previous experience in implementing water supply projects, and ongoing capacity building efforts, means it has sufficient staff capacity to implement the GEF financing.</p> <p>For road upgrading projects, a Principal Infrastructure Specialist has been out posted from PARC HQ to Dili, Timor Leste to lead project design and monitoring of implementation. A national Senior Portfolio Management Officer, has also been recruited and has extensive in-country experience in relation to climate change programs (including past involvement in NAPA preparation with UNDP). ADB field office staff will be supported as required by ADB HQ specialists. Detailed assessment of potential climate change impacts and adaptation costs for specific project roads will be undertaken by the firm of consultants appointed for detailed engineering design.</p> <p>VAN: The Department of Environmental Protection and Conservation (DEPC) has a dedicated division for environmental protection, with a solid waste officer, a chemical officer, a climate change adaptation officer and other relevant support staff for environmental engineering, environmental impact assessment, and environmental compliance.</p>
Project Consistency	10. Does the proposal clearly articulate how the capacities developed, if any, will contribute to the sustainability of project outcomes?	Please describe mechanisms and project activities in each country and at the regional level that are targeted towards ensuring sustainability of project outcomes.	<p>TIM: The Second District Capitals Water Supply project follows the model set out by the District Capitals Water Supply Project in terms of sustainability. First, it will support 2 years of operation & maintenance of the rehabilitated systems to (a) ensure the systems function as designed, (b) water is provided 24 hours per day, and (c) local authorities have time to build their capacity to operate and maintain the system and to manage private sector participants in urban water supply. Second, it will support local residents to take training/certifications in construction, operation and maintenance for the water sector thereby expanding the number of qualified technicians available locally to support the sector. Third, it will include hygiene awareness campaigns and support to local health officers to ensure communities understand how to maintain the quality of the new water supply.</p> <p>All proposals for major projects are vetted for viability and sustainability by the Major Projects Secretariat and the National Development Agency under current country systems. The Major Project Secretariat has an international environmental specialist with responsibility to review safeguard issues. The Government's Directorate of the Environment is responsible for reviewing environmental due diligence and issuing Environmental Licenses for individual projects. ADB-supported projects will undergo these processes in addition to due diligence mandated by ADB.</p> <p>TUV: The ADB Pacific Approach recognizes that in a micro-economy such</p>

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			<p>as Tuvalu, poor expenditure allocation decisions have significant opportunity costs that impede development and growth. For this reason, the focus of support to Tuvalu is on improving public sector management and the environment for private sector development. Support will be provided for strengthening budget management and implementing public enterprise reforms. Strengthening of public sector management will also provide fiscal space to enable policy makers respond to future exogenous shocks when these occur. This country operations business plan (COBP) is consistent with the Pacific Approach and its drivers of change, and CPS 2008-2012.</p> <p>ADB does not currently have planned “hard” infrastructure projects in Tuvalu. However, the government has expressed interest in participating in this program for support to address their urgent and immediate adaptation needs. The sub-project for Tuvalu will therefore be fairly innovative in that it will seek to incorporate adaptation into broader infrastructure planning, prioritization and budgeting process. It is at these earliest stages that very profound changes can be made to how infrastructure is planned, by, for example, ensuring that building codes and land zoning is appropriate to projected sea-level rise, in the case of small islands such as Tuvalu. Tuvalu’s first NAPA priority relates to coastal zone protection. In identifying their vulnerabilities for this priority, they identified the high level of vulnerability of coastal infrastructure as important to communities which are largely concentrated along the coastal zone.</p> <p>The baseline project for Tuvalu will therefore be through the Pacific Region Infrastructure Facility (PRIF), which is a multi-partner infrastructure coordination and financing mechanism. It was initiated in 2008 by the Asian Development Bank (ADB), the Australian Agency for International Development (AusAID), the New Zealand Government via the New Zealand Aid Programme (NZMFAT), and the World Bank Group (WBG). The European Commission (EC) and the European Investment Bank (EIB) became members of the joint initiative in 2010.</p> <p>The PRIF is supporting Tuvalu to prepare an Infrastructure Strategy and Investment Plan, which assists the central government to identify, prioritize and budget for key infrastructure projects, and is prepared iteratively. The objective of the work is to identify the Government’s needs, strategies, policies, and immediate priorities in the infrastructure sector as well as identify the financial resources to support their realization. The immediate output is the plan itself and increased capacity to implement it. PRIF management has confirmed support for this project and together with the government of Tuvalu believe it to be fundamental to directing future investments towards reducing vulnerability to climate change.</p> <p>VAN: Firstly, there is the enactment of two legislations dealing with pollution control and waste management, which will go to the Parliament in August 2012. These will allow for a clearer delineation of roles and responsibilities for waste and pollution control at the national, provincial, and community levels. Second, the DEPC structure will be revised to allow for more recruitment of capacity to implement the above laws and undertake any other roles relating to climate change adaptation and pollution control in general. Third, the National Advisory Committee for Climate Change is being restructured to integrate disaster risk reduction (DRR) into its portfolio and will be called the National Advisory Board (NAB), which will deal with both climate change adaptation and DRR. A project management unit is being established to oversee these changes and improve coordination of all climate change projects/ activities in Vanuatu.</p>
Project Design	11. Is (are) the baseline project(s),	Please describe the underlying problem	TIM: Although Timor has sufficient water supply overall, there are localized and seasonal supply issues. These are expected to worsen with climate change. For example, in towns that rely on rivers for their water supply,

Review Criteria	Questions	GEF Secretariat Comment at PIF (PFD) / Work Program Inclusion	Response
	including problem (s) that the baseline project(s) seek/s to address, sufficiently described and based on sound data and assumptions?	expected to be exacerbated by climate change that the baseline projects intend to address. In cases where there is a lack of sufficient data to carry out the baseline or the proposed LDCF projects, please provide suitable mechanism through which suitable data are generated, accessed or substituted with other reliable measures. For Tuvalu, please clarify the geographical coverage of the baseline project.	<p>longer and more severe dry seasons mean they may need alternative ground sources to supplement the river supply. The exact climate change issues of the three towns (Los Palos, Viqueque, and Baucau) covered by the project will be explored during the PPTA, and adaptation mechanisms will be built into the design of the project. During the PPTA, baseline data will be gathered to provide reliable measures for judging the project's impact on climate change adaptation.</p> <p>For road projects, the main problem is to ensure resilience of the constructed road to increased rainfall intensity through appropriately designed and constructed drainage and erosion protection measures. The PFD explains the lack of data and the proposed approach. Climate change downscaling has been conducted but with high variability in the mountainous landscape. The project may seek to strengthen the data but will also examine and agree sets of assumptions to guide decision making.</p> <p>TUV: The proposed sub-project will contribute to implementing NAPA Priority #1. Increasing resilience of Coastal Areas and Community Settlement to climate change. The proposed program will support Tuvalu to protect its coastal communities and infrastructure by directing investments towards projects which reduce vulnerability to climate change, particularly to sea-level rise and associated storms and impacts. In preparing its NAPA, the government identified a number of barriers to protecting coastal communities such as lack of building codes and norms for infrastructure. This is in addition to overall environmental degradation which makes the coast even more vulnerable. The project will work at the highest levels of government to effect significant changes to decision making and budgeting process in light of climate change priorities.</p> <p>The proposed sub-project will seek to incorporate climate change adaptation needs into the infrastructure prioritization and budgeting process. The activities are targeted therefore at the policy level but require important capacity building efforts as well as monitoring and evaluation of the effects of the project activities. There are very few examples globally where adaptation is being integrated at such high level of the decision-making process and there will be much to learn from this exercise. The project will also include a review and amendments to the building codes, and strengthened implementation capacity to enforce measures which will reduce the vulnerability of the coastline and associated assets.</p> <p>VAN: Climate change in Vanuatu may lead to: (a) increased fecal pollution from surface water runoff and related problems such as poor water quality; (b) increased sedimentation of coastal areas, to the detriment of coral reef areas; and (c) damage to physical infrastructures (e.g., roads, drainage systems, etc.).</p>
	20. Is the project implementation/ execution arrangement adequate?	Please provide details on implementation arrangement at project level including identification of executing agencies in each country.	<p>TIM: The National Directorate for Water Supply will be the implementing agency, and the Ministry of Infrastructure will be the Executing Agency. They will be supported by a urban water sector project implementation unit that is currently support the ongoing ADB-financed urban water sector projects. The existing steering committee for the District Capitals Water Supply Project (which includes national, district, and town stakeholders) will be expanded to include the three towns of the Second District Capitals Water Supply Project.</p> <p>The Executing Agency for the road projects will be the Council for Administration of the Infrastructure Fund (which is supported technically and administratively by the Major Projects Secretariat). The Implementing Agency will be the Ministry of Infrastructure, supported by a Project Management Unit. A firm of consultants will be responsible for detailed engineering design and construction supervision.</p> <p>TUV: The national agency to execute the project will be the Department of</p>

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			<p>Planning and Budget, Ministry of Finance and Economic Development (MFED). This department is the lead agency responsible for the development of The Tuvalu Infrastructure Strategy and Investment Plan 2012 (TISIP), which will guide investment planning for economic infrastructure for the next 5-10 years. In order to integrate climate change considerations into this plan, it is planned that the Department of Environment, within the Ministry of Natural Resources, Environment, Agriculture and Lands (who leads on climate change issues) will also be heavily involved in the project.</p> <p>VAN: National agency to execute the project – Public Works Department (PWD) National coordinating agency – Climate Change Unit, Meteorology Department Other supporting agencies – Department of Environmental Protection and Conservation (DEPC) Department of Water Resources Other concerned agencies</p>

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS¹⁴

A. Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF:			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
Total	0	0	0

¹⁴ If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.
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ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF Trust Funds or to your Agency (and/or revolving fund that will be set up)

None.