



Completion Report

Project Number: 49319-001
Loan Numbers: 3331, 3332, and 3552
Grant Numbers: 0459, 0460, 0461, and 0540
December 2021

Vanuatu: Cyclone Pam Road Reconstruction Project

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Asian Development Bank

CURRENCY EQUIVALENTS

Currency unit		–	Vatu (Vt)
		At Appraisal	At Project Completion
		25 October 2015	25 November 2019
Vt1.00	=	\$0.0091	\$0.0086
\$1.00	=	Vt110.00	Vt116.53

ABBREVIATIONS

ADB	–	Asian Development Bank
BBB	–	build back better
CLC	–	community liaison committee
DAB	–	Dispute Adjudication Board
DEAP	–	Disaster and Emergency Assistance Policy
DSC	–	design supervision consultant
EARF	–	environmental assessment and review framework
FIDIC	–	<i>Fédération Internationale Des Ingénieurs-Conseils</i>
GDP	–	gross domestic product
GEF	–	Global Environment Facility
GRM	–	grievance redress mechanism
IEE	–	initial environmental examination
IWG	–	infrastructure working group
km	–	kilometer
m	–	meter
MIPU	–	Ministry of Infrastructure and Public Utilities
NRESP	–	National Recovery and Economic Strengthening Program
PDNA	–	Post Disaster Needs Assessment
PMU	–	project management unit
PWD	–	Public Works Department
QCBS	–	quality- and cost-based selection
TA	–	technical assistance
TCP	–	Tropical Cyclone Pam
VPMU	–	Vanuatu Project Management Unit

NOTE

In this report, “\$” refers to United States dollars.

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CONTENTS

	Page
BASIC DATA	i
MAP	vii
I. PROJECT DESCRIPTION	1
II. DESIGN AND IMPLEMENTATION	1
A. Project Design and Formulation	1
B. Project Outputs	3
C. Project Costs and Financing	4
D. Disbursements	4
E. Project Schedule	4
F. Implementation Arrangements	6
G. Technical Assistance	6
H. Consultant Recruitment and Procurement	7
I. Gender Equity	7
J. Safeguards	8
K. Monitoring and Reporting	9
III. EVALUATION OF PERFORMANCE	10
A. Relevance	10
B. Effectiveness	10
C. Efficiency	11
D. Sustainability	12
E. Development Impact	12
F. Performance of the Borrower and the Executing Agency	13
G. Performance of Cofinanciers	13
H. Performance of the Asian Development Bank	13
I. Overall Assessment	13
IV. ISSUES, LESSONS, AND RECOMMENDATIONS	14
A. Issues and Lessons	14
B. Recommendations	15
APPENDIXES	
1. Design and Monitoring Framework	16
2. Project Cost at Appraisal and Actual	21
3. Project Cost by Financier	22
4. Economic Analysis	25
5. Global Environment Facility Terminal Evaluation Report	34
6. Disbursement of ADB Loan and Grant Proceeds	53
7. Contract Awards of ADB Loan and Grant Proceeds	60
8. Chronology of Main Events	67
9. Status of Compliance with Loan Covenants	68

BASIC DATA

A. Loan Identification

- | | | |
|----|----------------------------------|--|
| 1. | Country | Vanuatu |
| 2. | Loan number and financing source | Loan 3331 (concessional OCR lending)
Loan 3332 (concessional OCR lending)
Loan 3552 (concessional OCR lending)
Grant 0459 (Asian Development Fund)
Grant 0460 (Asian Development Fund)
Grant 0540 (Asian Development Fund)
Grant 0461 (GEF/Least Developed Countries Fund) |
| 3. | Project title | Cyclone Pam Road Reconstruction Project |
| 4. | Borrower/Recipient | Government of the Republic of Vanuatu |
| 5. | Executing agency | Ministry of Finance and Economic Management |
| 6. | Amount of loans and grants | Loan 3331 – SDR708,000 (\$1,000,000)
Loan 3332 – SDR1,986,000 (\$2,805,000)
Loan 3552 – SDR2,961,000 (\$4,100,000)
Grant 0459 – \$7,000,000
Grant 0460 – \$2,805,000
Grant 0461 – \$2,680,000
Grant 0540 – \$4,100,000 |
| 7. | Financing modality | Emergency assistance loan and grant |

B. Loan and Grant Data

- | | | |
|----|---|--|
| 1. | Appraisal
– Date started | 22 September 2015 (L3331, L3332, G0459, G0460, G0461) |
| | – Date completed | 01 February 2017 (L3552, G0540)
25 September 2015 (L3331, L3332, G0459, G0460, G0461)
4 February 2017 (L3552, G0540) |
| 2. | Loan and grant negotiations
– Date started | 22 October 2015 (L3331, L3332, G0459, G0460, G0461)
6 June 2017 (L3552, G0540) |
| | – Date completed | 22 October 2015 (L3331, L3332, G0459, G0460, G0461)
6 June 2017 (L3552, G0540) |
| 3. | Date of Board approval | 25 November 2015 (L3331, L3332, G0459, G0460, G0461)
9 August 2017 (L3552, G0540) |
| 4. | Date of loan and grant agreement | 1 March 2016 (L3331, L3332, G0459, G0460, G0461)
1 September 2017 (L3552, G0540) |
| 5. | Date of loan and grant effectiveness | |

- In loan and grant agreement 30 May 2016 (L3331, L3332, G0459, G0460, G0461)
- Actual 30 November 2017 (L3552, G0540)
- Number of extensions 3 March 2016 (L3331, L3332, G0459, G0460, G0461)
- Actual 27 November 2017 (L3552, G0540)
- Number of extensions 2
- 6. Project completion date
 - Appraisal 30 December 2017 (L3331, L3332, G0459, G0460, G0461)
 - Actual 31 December 2018 (L3552, G0540)
 - Actual 25 November 2019 (all loans and grants)
- 7. Loan and grant closing date
 - In loan and grant agreement 30 June 2018 (L3331, L3332, G0459, G0460, G0461)
 - Actual 30 June 2019 (L3552, G0540)
 - Number of extensions 31 May 2020 (all loans and grants)
 - Actual 2
- 8. Financial closing date
 - Actual 3 July 2020
- 9. Terms of loan
 - Interest rate 1%
 - Maturity 40 years
 - Grace period 10 years
- 10. Disbursements

a. Dates

	Initial Disbursement	Final Disbursement	Time Interval
Loan 3331	5 October 2017	8 April 2020	30.12 months
Loan 3332	5 October 2017	8 April 2020	30.12 months
Loan 3552	28 May 2019	14 May 2020	11.57 months
Grant 0459	12 October 2016	14 April 2020	42.08 months
Grant 0460	5 October 2017	14 April 2020	30.31 months
Grant 0461	5 October 2017	18 May 2020	31.43 months
Grant 0540	6 March 2018	15 May 2020	26.33 months
	Effective Date	Actual Closing Date	Time Interval
Loan 3331	March 2016	3 July 2020	52.04 months
Loan 3332	6 March 2016	3 July 2020	52.04 months
Loan 3552	27 November 2017	3 July 2020	31.20 months
Grant 0459	3 March 2016	3 July 2020	52.04 months
Grant 0460	3 March 2016	3 July 2020	52.04 months
Grant 0461	3 March 2016	3 July 2020	52.04 months
Grant 0540	27 November 2017	3 July 2020	31.20 months

b. Amounts: Individual Loans and Grants

(1) Loan 3331 (SDR' 000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4 = 1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	661	36	0	698	656	42
Interest	10			10	8	2
Contingency	36	(36)	0	0	0	0
Total	708		0	708	664	44

Note: Numbers may not sum precisely because of rounding.

(1) Loan 3331 (\$ '000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	934	37	0	971	913	58
Interest	15	0	0	14	11	3
Contingency	51	(51)	0	0	0	0
Total	1,000	(15)		985	924	61

Note: Numbers may not sum precisely because of rounding.

(2) Loan 3332 (SDR' 000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	1,854	101	0	1,956	1,831	124
Interest	30	0	0	30	23	8
Contingency	101	(101)	0	0	0	0
Total	1,986	0	0	1,986	1,854	132

Note: Numbers may not sum precisely because of rounding.

(2) Loan 3332 (\$ '000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	2,619	71	0	2,690	2,519	171
Interest	43	(1)	0	42	31	11
Contingency	143	(143)	0	0	0	0
Total	2,805	(73)	0	2,732	2,551	182

(3) Grant 0459 (\$ '000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	3,062	1,205	0	4,267	4,300	(33)
Consulting Services	3,938	(1,205)	0	2,733		128
Total	7,000	0	0	7,000	6,904	95

(4) Grant 0460 (\$ '000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	2,805	(188)		2,617	2,506	111
Consulting Services	0	188	0	188	186	2
Total	2,805	0	0	2,805	2,692	113

(5) Grant 0461 (\$ '000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	2,680	(183)	0	2,497	2,390	107
Consulting Services	0	183	0	183	136	47
Total	2,680	0	0	2,680	2,526	154

(6) Loan 3552 (SDR' 000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	2,721	181	0	2,902	2,497	405
Interest	59	0	0	59	10	49
Contingency	181	(181)	0	0	0	0
Total	2,961	0	0	2,961	2,508	453

Note: Numbers may not sum precisely because of rounding

(6) Loan 3552 (\$ '000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	3,769	224	0	3,992	3,436	557
Interest	82	(1)	0	81	14	67
Unallocated	251	(251)	0	0	0	0
Total	4,101	(28)	0	4,073	3,450	623

(7) Grant 0540 (\$ '000)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Civil Works	3,625	20	0	3,645	3,624	21
Consulting Services	475	(20)	0	455	442	13
Total	4,100	0	0	4,100	4,066	34

c. Project Data

1. Project cost (\$ million)

Cost	Appraisal Estimate	Revised Appraisal Estimate (Additional Financing)	Actual
Foreign exchange cost	16.29	24.49	23.13
Local currency cost	2.21	3.41	3.92
Total	18.50	27.90	27.05

2. Financing plan (\$ million)

Cost	Appraisal Estimate	Revised Appraisal Estimate (Additional Financing)	Actual
Implementation cost			
Borrower financed	2.21 ^a	1.20	3.92
ADB financed	13.61	8.20	20.60
Other external financing	2.68	0.00	2.53
Total implementation cost	18.50	9.40	27.05
Interest during construction costs			
Borrower financed			
ADB financed	0.06	0.08	0.06
Other external financing			
Total interest during construction cost	0.06	0.08	0.06

^a This amount at appraisal includes taxes and duties of \$1.91 million financed by the government through exemptions and 0.3 million for in-kind contribution for audit fees and counterpart staff.

3. Cost breakdown by project component (\$ million)

Component	Appraisal Estimate	Appraisal Estimate (Inc Additional Financing)	Actual
A. Investment Costs			
1. Civil Works	12.92	22.49	21.48
2. Consultants			
a. Design and Supervision	2.71	4.19	4.85
b. Environment and Social Mitigation	0.10	0.23	0.21
Subtotal (A)	15.73	26.91	26.54
B. Recurrent Costs			
1. Salaries	0.10	0.15	0.10
2. Accommodation	0.15	0.22	0.15
3. Audit Fees	0.05	0.08	0.2
Subtotal (B)	0.30	0.46	0.45
Total Base Cost	16.03	27.36	26.99
C. Contingencies			
1. Physical	1.60	0.00	0.00
2. Price	0.81	0.40	0.00
Subtotal (C)	2.41	0.40	0.00
D. Financing Charges During Implementation			
1. Interest During Implementation	0.06	0.14	0.06
Subtotal (D)	0.06	0.14	0.06
E. Total Project Cost (A+B+C+D)	18.50	27.90	27.05

4. Project schedule

Item	Appraisal Original Estimate	Additional Financing Estimate	Actual Original Financing	Actual Additional Financing
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Design & Supervision	Q1 2016	27 June 2016	
Contract signing			
Design & Supervision	Q1 2018		22 March 2018
Phase 2 Contract signing			
Civil works contract (Phase 1)			
Date of award	Q3 2016	04 August 2017	
Completion of work	30 June 2018	25 November 2019	
Civil works contract (Phase 2)			
Date of award	Q1 2018		18 December 2017
Completion of work	30 June 2019		25 November 2019

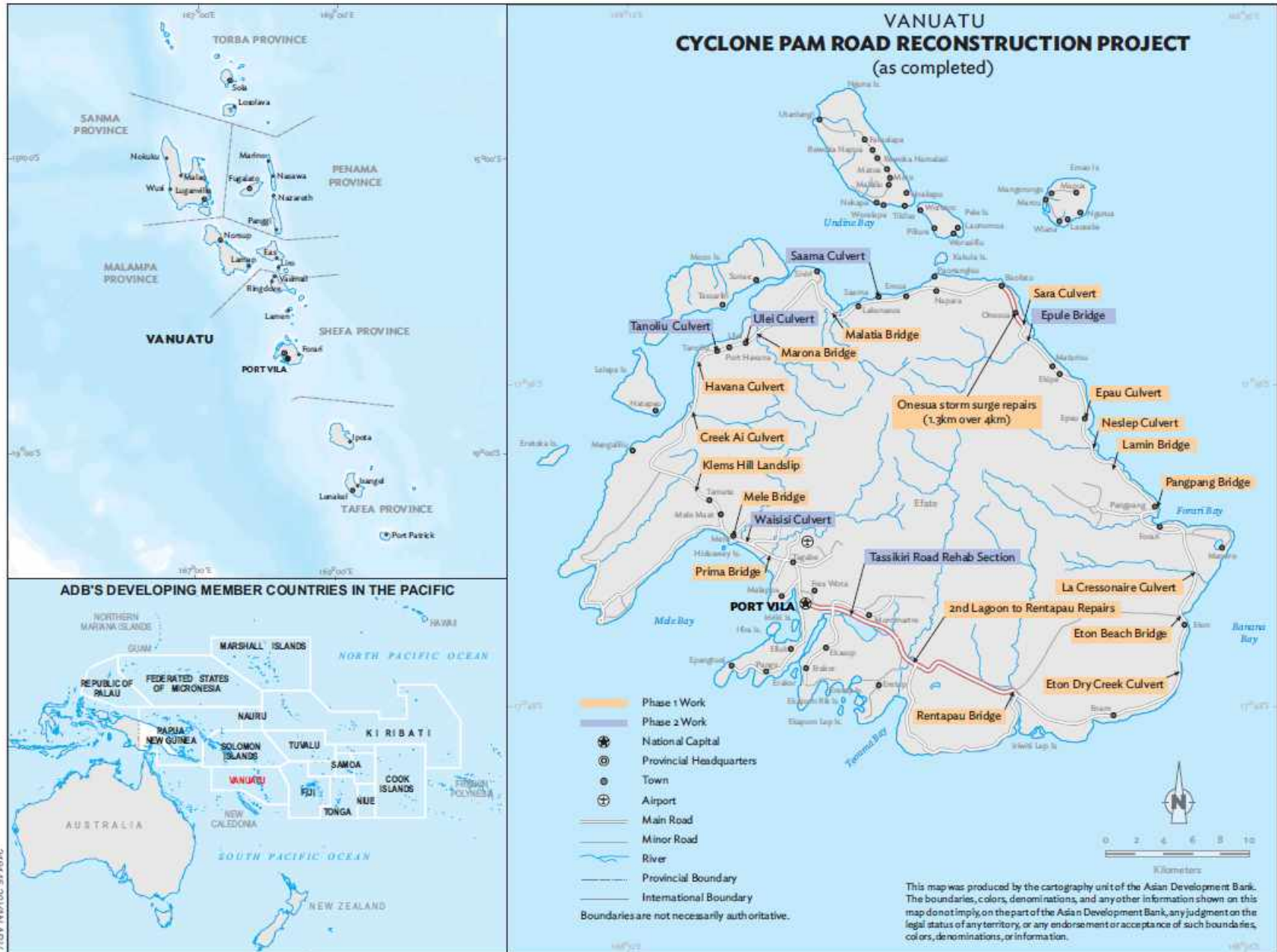
5. Project performance report ratings

Implementation Period	Single Project Rating
From 01 April 2016 to 30 June 2016	Actual Problem
From 01 July 2016 to 30 September 2016	Potential Problem
From 01 October 2016 to 31 December 2016	On track
From 01 January 2017 to 31 March 2017	On track
From 01 April 2017 to 30 June 2017	Potential Problem
From 01 July 2017 to 30 September 2017	On track
From 01 October 2017 to 31 December 2017	On track
From 01 January 2018 to 31 March 2018	On track
From 01 April 2018 to 30 June 2018	Potential Problem
From 01 July to 30 September 2018	On track
From 01 October 2018 to 31 December 2018	On track
From 01 January 2019 to 31 March 2019	Potential Problem
From 01 April 2019 to 30 June 2019	Potential Problem
From 01 July 2019 to 30 September 2019	Potential Problem
From 01 October 2019 to 31 December 2019	On track
From 01 January 2020 to 31 March 2020	Potential Problem
From 01 April 2020 to 30 June 2020	On track

D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members
Inception	29 July–3 August 2016	2	9	a, d
Review and additional financing fact-finding mission	29 January–8 February 2017	2	16	b, d
Midterm review mission	27–30 November 2017	1	3	b
Review	14–28 February 2018	1	14	d
Safeguards review	26–29 November 2018	1	1	c
Review	4–5 February 2019	1	1	c
Review	6 March 2019	2	2	a, e

a = engineer, b = senior infrastructure specialist/mission leader, c = environmental safeguard specialist, d = associate project analyst, e = project analyst (consultant).



I. PROJECT DESCRIPTION

1. The destructive category 5 Tropical Cyclone Pam (TCP) battered Vanuatu from 13 to 14 March 2015, causing one of Vanuatu's worst disasters. Severe and widespread damage was recorded on the larger islands of Erromango, Efate, and Tanna. TCP displaced an estimated 65,000 people, resulted in 11 fatalities, and caused widespread damage to about 17,000 buildings, as well as crops and transport infrastructure. On the main island of Efate, the damage to transport infrastructure in isolated communities prevented the delivery of critical supplies and disrupted economic activities. The post-disaster needs assessment (PDNA) identified that Efate's 116 kilometer (km) ring road had sustained damage to waterway crossings and pavement sections at 19 sites.¹ With no radial roads across the island, the damaged road sections constrained access to service centers, with consequent social and economic impacts on Efate's population of 85,000.

2. The PDNA informed the formulation of the Strengthening ni-Vanuatu Resilience: National Recovery and Economic Strengthening Program Plan (NRESP), which was approved in June 2015.² The Asian Development Bank (ADB) committed funds for recovery needs in its country operations business plan.³ The Cyclone Pam Road Reconstruction Project (the project) was approved in November 2015 to support the reconstruction and climate- and disaster-proofing of the ring road around Efate.⁴ The Global Environment Facility (GEF) funded a portion of the civil work to ensure that the building back after TCP was climate-resilient.⁵ The compressed timeframe within which the PDNA was prepared limited the scope of the engineering assessments. Later investigations of the Efate ring road identified further additional requirements: (i) the replacement of three more drainage structures;⁶ (ii) the replacement rather than repair of two bridges; and (iii) an additional road section. These works, referred to as phase 2, were included in a request for additional financing, raising the project cost from \$18.5 million to \$27.9 million.

3. The expected impact of the project was accelerated economic and social recovery in the cyclone-affected areas. Its expected outcome was socioeconomic activities restored to at least pre-Cyclone Pam levels. The project's single output was transport infrastructure in damaged locations on the Efate ring road reconstructed to a climate-resilient and disaster-proofed standard.

II. DESIGN AND IMPLEMENTATION

A. Project Design and Formulation

4. The project design followed the NRESP priorities and the "build back better" (BBB) approach. The NRESP aimed to (i) promote a participatory approach to reconstruction; (ii) use

¹ Government of Vanuatu. 2015. *Post Disaster Needs Assessment*. Port Vila. It determined the direct physical damage and indirect losses resulting from TCP, and the nature and cost of reconstruction needs.

² Government of Vanuatu. 2015. *Strengthening ni-Vanuatu Resilience – National Recovery and Economic Strengthening Program*. Port Vila.

³ ADB. 2015. *Country Operations Business Plan: Vanuatu, 2016–2018*. Manila.

⁴ ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Loans, Grants, and Administration of Grant to the Republic of Vanuatu for the Cyclone Pam Road Reconstruction Project*. Manila.

⁵ GEF Least Developed Country Funds were used to fund costs associated with a 20% increase in the short-term design rainfall intensity for outputs in the Port Vila urban area. A 10% increase in rainfall intensity was adopted for the Efate ring road waterway crossing designs. The GEF Terminal Evaluation Report in Appendix 5 provides details on the GEF objectives and compares the benefits achieved with those anticipated in the GEF Chief Executive Officer project endorsement.

⁶ Culverts were constructed at Tanaliu, Saama and Ulei. Bridges were replaced at Prima and Epule, and the new road section was in Tassiriki.

local skills, institutions, and resources; (iii) adopt climate and disaster risk reduction measures to lessen vulnerability to future risks; (iv) promote the recovery of local livelihoods; and (v) enable a more cost-effective and sustainable recovery (footnote 2). The BBB approach aimed to restore connectivity (road formations, structures, and associated drainage) to the former level of functionality and include features that would increase resilience by applying higher engineering design standards.⁷ An ADB rapid assessment of damaged transport infrastructure and public buildings on Efate observed that large water flows had caused a build-up of debris against bridges and culverts, backing up water levels and diverting flows, which then severed roads and caused extensive damage. To address this issue, the resilience of waterway crossing infrastructure was reinforced by identifying hydrologic design parameters based upon representative concentration pathway (RCP) 6.⁸

5. To minimize environmental (and social) impacts, the project focused on reconstruction works within the existing road corridor. Early in the recovery process, ADB implemented “emergency assistance” measures (see para. 7). This included developing an environmental assessment and review framework (EARF) as part of the safeguard’s due diligence. The EARF specified site selection criteria, which excluded consideration of subprojects or sites involving (i) roads in or adjacent to areas determined as critical or natural habitat, protected areas, or ecologically sensitive areas; (ii) major realignment of the existing road; (iii) significant loss or damage to near-shore marine environments, such as reefs, mangroves, or other sensitive coastal areas; (iv) permanent negative impacts on known rare, threatened or endangered species; and (v) permanent damage to cultural relics and tabu sites, or other physical cultural resources.

6. A multicriteria analysis identified the remediation sites most important to the connectivity and socioeconomic wellbeing of the Efate communities. The criteria included: (i) improved access to social services for rural households, including schools, health facilities, and government extension services; (ii) potential to increase private sector participation in civil works activities; (iii) potential to catalyze development around Efate, particularly in tourism; and (iv) reduced vehicle operating costs and travel time. At least three remediation options were considered at each site, ranging from minimal repair to full replacement or reconstruction. Recognizing budget limits, the extent of work undertaken at each site considered the agreed priorities in the multicriteria analysis. A workshop on 24 August 2016 secured stakeholder agreement on the scope of remediation works at each site.

7. The formulation of the emergency response project was governed by the ADB Disaster and Emergency Assistance Policy (DEAP) of 2004.⁹ Implementation under emergency procedures permitted greater flexibility and more favorable lending terms. Consistent with the

⁷ The BBB approach was consistent with the objectives set out in the GEF Chief Executive Officer Endorsement Document. Strategies to advance the BBB concept included: introduction of safety improvements; securing improved connectivity; increasing structure longevity; and enhancing community amenity. Complementary benefits, such as social facility improvements, environmental protection, and climate change adaptation were integrated as far as was economically viable. These considerations resulted in other pavement and road safety improvements, the replacement of bridges (Prima, Mele, Marona, Tanaliu and Lamin), provision of a new higher level box culvert at Creek Ai, the provision of relief culverts at Malatia to increase the hydraulic capacity of river cross sections, major coastal protection works (Onesua), and slope stability and drainage works at Klems Hill.

⁸ An RCP is a greenhouse gas concentration (not a measure of emissions) trajectory adopted by the Intergovernmental Panel on Climate Change. The pathways describe different climate futures, all of which are considered possible depending on the volume of greenhouse gases emitted in the years to come. RCP 6 denotes a “medium emissions” scenario. With reference to the IPCC Fifth Assessment Report of 2014 climate modelling indicates a 5% increase in rainfall intensity per degree of warming. Rainfall intensities were increased 10% for Efate ring road drainage design purposes.

⁹ ADB. 2004. *Disaster and Emergency Assistance Policy*. Manila.

intention that emergency assistance loans focus on immediate short-term requirements, the DEAP then limited the implementation period for projects addressing disasters triggered by natural hazards to two years. Extensions beyond four years required the approval of the Vice President.

8. The project design ensured that the outputs would be closely aligned with the needs of the affected communities by giving them a strong voice during planning, design preparation, and implementation. Under the EARF and safeguard procedures set out in the Project Administration Manual, the implementing agency, the Ministry of Infrastructure and Public Utilities (MIPU), established community liaison committees (CLCs) at five locations along the Efate ring road. The participation of the civil works contractor and key community representatives, including women and people with disabilities, ensured that the CLCs emerged as an effective forum for discussing planned and ongoing works and their impact on the communities.

9. ADB's emergency response was guided by the Interim Pacific Approach, 2015, which extended the validity of the Pacific Approach, 2010–2014.¹⁰ Understanding the local context, demonstrating flexibility, and promoting participation and ownership are among the guiding principles of the Pacific Approach. The Pacific Approach promotes simplicity in project design and operations in response to the emergency nature of projects. The project's implementation arrangements were simple and flexible. Due to the limited number of technical and engineering staff in the implementing agency, a design and supervision consultant (DSC) was engaged and financed from project funds to incorporate BBB design approaches and support MIPU to deliver the project.

B. Project Outputs

10. Project achievements at completion are summarized in Appendix 1. The project identified two outcome-level indicators. The first target, which was an increase in the gross domestic product (GDP) growth projection to 3.6% by 2018 (up from an actual of 1.6% in 2015), was not quite met with 2.9% growth being achieved, still an increase on the 2015 level. The second target was 130 km of road connected for road users to facilitate trade, which was also achieved. By repairing damaged sections, the project restored connectivity along the entire 116.2 km of the Efate ring road, and by doing so, restored connectivity for all adjoining urban and rural roads across the Efate road network.

11. The project had one output: transport infrastructure in damaged locations on Efate ring road reconstructed to a “climate-resilient” and “disaster-proofed” standard. The output included road rehabilitation (16.2km over two sites), coastal protection, drainage improvements, and repairs or replacements to eight bridges and twelve culverts. All envisaged deliverables of the original project, and the expanded project, were achieved. At appraisal, independent works were anticipated at 19 sites. After approval of the additional financing, works involved 24 sites. All approved works were constructed to a high-quality finish.

12. The DSC involvement in the project ended on 31 October 2019, 25 days before the physical works were declared complete by MIPU on 25 November 2019. MIPU assumed responsibility for the administration of the remaining physical works and the one-year defect liability period. The absence of independent supervision resources may have contributed to the less-than-optimal administration of contract closeout tasks. Prominent works not completed

¹⁰ ADB. 2015. *Interim Pacific Approach, 2015*. Manila; and ADB. 2009. *ADB's Pacific Approach, 2010–2014*. Manila

included road signage and road line markings from the second lagoon to the Rentapau bridge.¹¹

C. Project Costs and Financing

13. At approval in 2015, the project cost was estimated at \$18.5 million equivalent. In 2017, the additional requirements (para. 2) raised the total cost to \$27.9 million, for which ADB provided a \$4.1 million loan and \$4.1 million grant. In total, ADB provided two loans totaling \$5.1 million and two grants totaling \$11.1 million, as well as one loan (\$2.8 million) and one grant (\$2.8 million) from the Disaster Response Facility. In addition, the GEF provided a grant of \$2.7 million to fund a portion of the civil works.¹² The government's counterpart financing of \$3.4 million was mainly in kind. The cost of associated services and recurrent cost items accounted for the balance.

14. The cost for supervision consulting services increased by \$0.9 million to \$4.2 million, to pay for supervision of additional civil works and a time extension. The incremental project cost (salaries and accommodation) increased from \$0.24 million at appraisal to \$0.45 million at completion. ADB financing for the civil works and consulting services accounted for 78% of the total project cost. The GEF funding of \$2.7 million represented 10%, and the government contribution of \$3.4 million represented 12%. ADB's decision not to extend the project closing date resulted in an unspent total of SDR 629,068 from ADB's concessional ordinary capital resources and \$395,512 from the grants being canceled at the formal close of accounts on 3 July 2020 (paragraph 46). Cost estimates and final costs are in Appendix 2. The original financing plan and actual loan and grant allocations by financier are in Appendix 3.

D. Disbursements

15. At appraisal, the ADB loan and grants were expected to be disbursed within three years (with release of retention monies 12 months after planned completion). The first disbursement, which was forecast for 2015, was actually made on 12 October 2016, and the last on 18 May 2020. Appendix 4 compares the originally planned disbursements with the actual disbursements.

E. Project Schedule

16. The PDNA was issued by the government on 11 May 2015, followed by a draft Recovery Plan released in June 2015. By early August 2015, the government advised development partners of sector rebuilding priorities, upon which development partner interventions were agreed for the next 24 months. ADB approved the original project (phase 1) on 26 November 2015 and the additional financing (phase 2) on 9 August 2017. The first set of ADB loans and grants became effective on 3 March 2016, and project implementation was to be completed by 30 December 2017, followed by loan account closure on 30 June 2018. The additional financing loans and grants became effective on 27 November 2017, with the associated works to be completed by 31 December 2018, followed by loan and grant account closure on 30 June 2019.

17. Administration of the DSC's quality- and cost-based selection (QCBS) recruitment was delegated to ADB. After a four-month delay in securing State Legal Office approval of the draft contract, the DSC contract was awarded on 17 June 2016. The consultant mobilized promptly and commenced services on 6 July 2016, 4 months after effectiveness.

¹¹ As-built drawings were not available to confirm the extent to which these important road safety features had been implemented. In late-2021, MIPU plans for the contractor to apply the line markings and road signs based on design drawings prepared by PWD. The probability of crashes on this now high-speed capable road represents a significant risk to road users.

¹² The GEF Terminal Evaluation Report in Appendix 5 provides a further breakdown.

18. The bidding documents for the phase 1 civil works were issued on 27 January 2017, with a closing date of 16 March 2017. Six bidders participated. Seven versions of the bid evaluation report accommodated multiple clarifications and a change to the recommended contract award.¹³ Four months elapsed between the civil works proposal deadline and the \$12.19 million contract award to the successful contractor on 13 July 2017. The contract was signed on 4 August 2017. The contract start date was 9 October 2017 with a 395-day (13 months) contract duration. The actual contract completion date was 25 November 2019, representing a 25.5-month contract duration. Delays in the mobilization of resources, materials, and equipment resulted in a slow start to the civil works.¹⁴

19. The bidding documents for the phase 2 civil works were issued on 2 August 2017, with a closing date of 21 September 2017. Three bidders participated. On 17 November 2017, a VT858,165,000 contract (\$7.8 million equivalent) was awarded to the contractor already undertaking the phase 1 work. The contract was signed on 18 December 2017. The contract start date was 15 January 2018 with a 270-day (9 months) contract duration. The actual contract completion date was 25 November 2019, representing a 21.4-month contract duration.

20. The contractor pursued several claims early on without recourse to the contract dispute mechanisms. These informed the only approved contract extension on 17 April 2019.¹⁵ The settlement for the claims involved extensions of 9.5 months (to 31 August 2019 for phase 1 and to 31 July 2019 for phase 2), and payment for time based preliminary items in the bills of quantity. Interest on delayed payments was also paid as the phase 2 FIDIC small form contract did not contain provision for issuance of separable portion completion certificates – an important contract payment trigger.¹⁶ No extensions were approved to extend the phase 1 contract closing date of 31 August 2019 to the physical works' actual completion date of 25 November 2019. MIPU elected not to enforce the delay damages contract provisions. If MIPU had signaled an early intent to enforce these provisions, this may have encouraged the contractor to mobilize additional resources to achieve on time completion.

21. The project completion date was extended twice. In May 2019, a 10-month extension (to 31 October 2019) was approved considering the slow start to the phase 1 civil works contract, the need to redesign several drainage structures, and land access issues at the Epule bridge site (para. 34). A 25-day extension was approved by ADB in October 2019 (bringing the closing date to 25 November 2019) to accommodate outstanding line marking works and landscaping at Klem's Hill. As the phase 2 works were to be completed in parallel with phase 1, no extension was needed when the additional financing (phase 2) increased the total scope of the civil works

¹³ The successful bidder was first rejected as they did not demonstrate adequate vibratory piling experience for the Klem's Hill "stone column" works. ADB and the Public Works Department later accepted the experience of their nominated subcontractor as sufficient.

¹⁴ The delay may have been exacerbated by the contractor winning another significant contract in Vanuatu. The contractor was in parallel awarded an approximately \$60 million civil works contract under the World Bank funded Pacific Aviation Investment Program. The works involved the rehabilitation of the Bauerfield airport runway, apron, taxi-way improvements, and construction of a new domestic terminal, and the provision of airport equipment for each of the Bauerfield, Pekoa and Whitegrass International Airports.

¹⁵ The phase 1 contract claim involved a 236-day extension and \$2.39 million in additional costs. The phase 2 claim involved a 263-day extension, with VT406 million in additional costs. Delays associated with the acquisition of land at the Epule bridge provided the contractor with strong justification for the phase 2 claim.

¹⁶ A separable portion is a discrete part of the site that has a different access date and/or date for practical completion to other parts of the site. Projects are divided into separable portions to allow the principal to maximize its use of the site before construction of the entire scope of work is complete. The project involved discrete construction work at 24 different locations, with work at six locations governed by the phase 2 FIDIC small form contract.

by 50.4% in value. The government released retention monies on 12 and 14 April 2020 before the financial close on 3 July 2020.

F. Implementation Arrangements

22. The implementation arrangements were appropriate. The NRESP required externally funded projects to be implemented by line ministries. MIPU was the implementing agency and assigned the project to its Public Works Department (PWD). A project management unit (PMU) comprising PWD staff and the DSC was established in MIPU to design, administer, and implement the project. The Ministry of Finance and Economic Management was the executing agency.

23. Responsibility for project preparation was assigned to an infrastructure working group (IWG) created within MIPU. The IWG consisted of the Director-General of MIPU, the Director of PWD, the operations manager, provincial managers, and PWD engineers. ADB participated as an observer to the IWG. The DSC was integrated into MIPU's engineering unit and reported directly to the IWG. The PMU was responsible for all implementation activities, including feasibility studies, detailed design, the preparation of cost estimates, the administration of procurement, contract management and supervision, project communications, safeguards implementation, and monitoring and evaluation. The DSC was an international firm and acted as a lead consultant with support from individual international and national experts.

24. A single adjudicator was appointed on 1 February 2017 as the Dispute Adjudication Board (DAB) for the phase 1 contract. The same individual was appointed on 1 February 2018 as the dispute adjudicator for the phase 2 contract.¹⁷ The individual proactively monitored construction progress through regular site visits and offered timely and impartial advice to each of the parties. A DAB and dispute adjudicator ruling was made in March 2020 to settle several disputes (paragraph 20). Neither party contested the resolution. MIPU cites the proactive performance of the DAB and dispute adjudicator as a vital enabler of civil and productive relations between the contractor and the engineer.

G. Technical Assistance

25. No technical assistance (TA) was attached to the project. However, ADB approved a \$225,000 TA during the project to review and strengthen the project management capacity of the central Vanuatu Project Management Unit (VPMU) that resided in the Office of the Prime Minister, MIPU, and PWD.¹⁸ This TA was conceived in response to cumulative delays experienced by government implementing agencies working on parallel TCP recovery projects and other development projects. By strengthening MIPU's capacity, the TA helped to implement the project. The TA addressed underlying concerns on the effectiveness of and duplication of responsibilities among MIPU, VPMU, PWD, and other ministries. The TA aimed to strengthen the project management and implementation capacity of MIPU, VPMU, and PWD by providing on-the-job training to their staff. The TA created synergies with the project and was rated successful on completion.¹⁹

¹⁷ The Dispute Adjudication Board appointment is required in the dispute resolution section of the FIDIC long form contract used for contracts exceeding \$10 million in value. The dispute adjudicator appointment is similarly required in the FIDIC short form contract.

¹⁸ ADB. 2016. *TA 9263-VAN: Supporting the Vanuatu Project Management Unit and the Ministry of Infrastructure and Public Utilities*. Manila.

¹⁹ ADB. 2019. *Completion Report. Vanuatu: Supporting the Vanuatu Project Management Unit and the Ministry of Infrastructure and Public Utilities*. Manila.

H. Consultant Recruitment and Procurement

26. All procurement was undertaken under ADB's Procurement Guidelines (2015, as amended from time to time). The involvement of the GEF cofinancing enabled universal procurement. Limited international bidding involving prequalified bidders was initially anticipated in line with ADB's procurement guidelines under disaster and emergency assistance. As near two years elapsed between the onset of the cyclone and the release of the civil works bidding documents, the default international competitive bidding procurement method was used to secure a more competitive response from the market.

27. At appraisal, two civil works packages were anticipated. Concerns about the ability of large trucks to safely ascend Klem's Hill, to deliver critical supplies from Port Vila to the west coast, led to the initial decision to separate the Klem's Hill stabilization work for advance contracting in a single \$2 million package. The Klem's Hill work was subsequently included with the other work items in the single phase 1 package involving eighteen sites.²⁰ A single package was also awarded for the phase 2 scope involving six sites.

28. ADB was delegated responsibility for consultant recruitment, and advanced contracting was used to expedite the QCBS recruitment of the DSC (paragraph 17). The request for proposal was issued on 18 December 2015 with a bid closing date of 2 February 2016. The DSC contract was awarded on 17 June 2016 and signed on 27 June 2016, making it 191 days from issuing the request for proposal to signing the contract. Services with a three-year contract term started in July 2016. A separate \$0.47 million contract was signed on 22 March 2018 for phase 2 supervision.

I. Gender Equity

29. The project was approved with a "some gender elements" classification. The project's socially inclusive and gender-responsive features contributed positively to development impacts for women.²¹ Women participated in decision-making processes and were consulted on methods to improve project design's social and gender-responsive aspects. The design and monitoring framework incorporated gender-specific targets/indicators, the achievement of which was monitored in the quarterly progress reports.²²

30. As required, the DSC recruited both men and women in the project team. Against the 30% target for women's participation throughout design and implementation, the project achieved 27.5%. Resettlement and community consultation meetings were conducted by both male and female facilitators. However, non-attendance by female facilitators later during project implementation resulted in the targeted participation rate not being achieved. On the civil works

²⁰ The Bill of Quantity line-item (excluding preliminaries) cost for Klem's Hill work in the Phase 1 contract was \$680,000. During implementation, the contractor proposed an alternative design not involving piling. The Employer accepted the proposal involving \$220,000 in savings. Klem's Hill was the last site completed before project close.

²¹ The gender responsive infrastructure design included universal access features, such as footpaths on all bridges with concrete footpaths adjoining waterway crossings, concrete paths providing access to waterways, and improvements to existing washing areas or construction of new ones.

²² A gender and social awareness seminar was held for PWD and MIPU staff as part of the contractor induction in July 2017. 100% of construction workers and 80% of roadside inhabitants received education in gender equality and HIV/AIDS awareness. Community consultations targeted at least 30% participation by women – 27.5% participation was recorded across the project duration. Note that 29.7% participation was recorded up to the end of the feasibility study consultations. Resettlement and community consultation meetings were to be conducted by both male and female facilitators. Non-attendance by planned facilitators later in the project implementation period resulted in less than the targeted participation rate.

contracts, women took up employment involving traffic control, traffic survey work, and provision of food to the construction workforce. Women and men engaged in the project were paid equal wages for equal work. Training and awareness activities were accessible to both women and men and involved (i) traffic control, (ii) safeguards, (iii) HIV/AIDS awareness and prevention, and (iv) gender-sensitive transport and road safety issues.

J. Safeguards

31. The project was category B for both environment and involuntary resettlement and category C for indigenous people. MIPU, as the implementing agency, had overall responsibility for compliance with safeguard requirements. Semiannual safeguards monitoring reports were submitted to ADB and disclosed on ADB's website in a timely manner from mid-2016 to end-2019.

32. **Environment.** The EARF provided a procedure for the environmental assessment and clearance of subproject works confirmed after project approval.²³ An initial environmental examination (IEE) was prepared to cover phase 1 and subsequently phase 2 works, and the IEE was reviewed and cleared by ADB. With the cleared IEE as the basis of the applications, environmental permits were issued by the Department of Environmental Protection and Conservation and foreshore development consents by the Department of Physical Planning for both the original project and the additional financing. The Department of Environmental Protection and Conservation required additional baseline biodiversity information at three sites before construction to meet the permit conditions.²⁴ These requirements were incorporated into the construction environmental management plan.

33. A range of relatively minor and typical environmental safeguard non-compliances was identified during construction. These included: failure to maintain sediment fencing, issues with waste disposal and dust control, and not keeping the communities informed of activities or employment opportunities. Each was dealt with in accordance with the environmental permit, approved construction environmental management plan, construction contract, and ADB and government safeguards requirements. The non-compliances were recorded, tracked, and closed, and the PMU reported this process in the semiannual safeguards monitoring reports and quarterly progress reports.

34. **Involuntary resettlement.** A land due diligence report was prepared and disclosed, covering the access arrangements at the sites included in phase 1 and 2 works. As the project was within the ring road right-of-way, only temporary access to land outside the right-of-way was expected during construction. An exception was the replacement of the Epule bridge, where a change in bridge alignment resulted in the need to obtain about 1,400 square meters involving two land leases. A resettlement plan was prepared, setting out the procedure for the land transfer arrangements and compensation. There were delays in establishing the arrangements following Custom Owners Trust Account requirements, and two years passed before the agreements were

²³ The EARF covered the selection, screening, assessment, implementation, and monitoring of subprojects during the design and construction phases of the project. The EARF required that environmental assessment and clearance of subprojects would comply with the country safeguard system (CSS) of Vanuatu and ADB's Safeguard Policy Statement 2009.

²⁴ A fish and invertebrates' study for three sites (Epau, Creek Ai & Ulei) was completed on 9 June 2017. The foreshore development applications for Tanaliu, Malatia, Eton Dry Creek, Sara, and Onesua were resubmitted by PWD on 30 January 2017. This followed requests for separate applications for each of the subprojects, including additional support documents from relevant government departments. Approval was received from the Minister of Internal Affairs on 21 April 2017, for all five sites.

secured. Despite the delay, the government—following the appropriate procedures—managed the legal process effectively. The transfer and compensation process was concluded in May 2019.

35. **Training and communications.** Training included awareness-raising on (i) traffic and road safety and management, (ii) safeguards, and (iii) gender-inclusive transport considerations. In addition, a communicable diseases awareness and prevention program was delivered by an approved service provider engaged by the civil works contractor. A communications and consultation plan for the project was prepared and implemented. The plan guided the release of project information to the stakeholders (including through meetings of the CLC) and how the contractor informed communities of works plans. The DSC engaged a nongovernment organization to deliver STI/HIV/AIDS awareness training.

36. **Grievance redress.** Following the outline of the process in the EARF, the IEE and land due diligence report detailed the grievance redress mechanism (GRM). The GRM was administered by the MIPU, while the contractor maintained a parallel grievance register at the site office and dealt with construction-related issues. The status of grievances and issues raised through both the GRM and the register was recorded in safeguards monitoring reports.

K. Monitoring and Reporting

37. ADB conducted seven missions, including a project inception mission, four review missions, one midterm review mission, and one review and additional financing fact-finding mission. Safeguards inspections were conducted as part of each mission and additional non-mission reviews and status updates. The safeguards inspections were conducted jointly with the DSC and included the contractor's environment, health, and safety officers. The missions monitored implementation progress and compliance with safeguards requirements, and these were documented in the safeguards monitoring report submitted in a timely manner by the PMU. The Quarterly Progress Reports covered implementation progress, procurement, disbursements, and safeguards compliance. Annual project implementation reports were submitted to the GEF.²⁵

38. Missions recorded that most covenants were either complied with or were being complied with. The loan and grant covenants involving procurement and consultant recruitment methods were contradictory. In both cases, the prior approval of the ADB procurement department was sought to identify an acceptable approach.²⁶ Road safety audits were conducted and resulted in speed control measures being introduced near the school in Ulei. GEF Communication and Visibility Guidelines were followed. The government did not comply with the covenant requiring increased budget operations and maintenance allocations over time²⁷. The government complied with the submission of audited project financial statement requirements, albeit with some delays. The statements were audited annually by the Office of the Auditor General. Outstanding management letter comments carried forward from the 2017 audit are still to be addressed. ADB deemed all audit reports to be generally acceptable. The status of covenant compliance is in Appendix 9.

²⁵ Refer to the GEF Terminal Evaluation Report in Appendix 5 for monitoring and evaluation information as per GEF guidelines.

²⁶ Limited international bidding and international competitive bidding were covenanted in different agreements for the civil works contract. Likewise, QCBS and single source selection (SSS) were nominated in different agreements for the recruitment of the DSC.

²⁷ Refer paragraph 19, Schedule 5 of the Original Financing Agreements for L3331/3332 G0459/0460 dated 1 March 2016 and in Additional Financing Agreement L3552 dated 1 September 2017.

III. EVALUATION OF PERFORMANCE

A. Relevance

39. The project is rated *highly relevant*. The emergency assistance loan funded an obvious need resulting from a disaster event at the government's request. The project was transformational as it restored connectivity and livelihoods through the reconstruction of destroyed infrastructure. The project was closely aligned with the NRESP, particularly the goal of reconstructing damaged infrastructure and strengthening its resilience to future disasters and climate change. By including features that would mitigate the impact of future disasters, the design was consistent with ADB's DEAP. In addition, it was consistent with ADB's priorities for Vanuatu, as elaborated in the country operations business plan 2016–2018, which acknowledged the need to provide support for cyclone recovery and reconstruction.

40. The project, which was designed under emergency procedures, introduced the necessary flexibility to enable the achievement of the intended outcomes. The project design balanced the need for long-term capacity development with the need for expeditious post-disaster relief. The fast-tracked feasibility designs were formulated in the absence of geotechnical and hydrological information. Subsequent investigations necessitated scope changes that required additional financing. This is a positive, timely, and appropriate response to emergency assistance projects that need to accommodate unforeseen needs. ADB's approval of an emergency response project involving longer-term reconstruction works, not strictly eligible for financing under the emergency assistance loan modality, represents an institutional willingness to meet developing member countries' requests for assistance following a disaster.

41. At appraisal, Vanuatu was building capacity to take advantage of emerging climate financing partnerships and opportunities. The project climate-proofing objective required consideration of a variety of scenarios involving lengthy discussions on representative concentration pathways. The definition of the incremental cost of adaptation to climate change was at the time novel. It will serve as a useful example for Vanuatu to reference as it deals with climate financing institutions going forward.²⁸

42. A total of 24 subprojects (works at discrete sites) were constructed, complete with records that document a disciplined options analysis through the multicriteria analysis and prioritization of a range of possible structural interventions. The project offers a credible emergency assistance project implementation model for replication. The number of subprojects included at appraisal was realistic, and the locations of the subprojects were appropriate. All 19 sites identified during the PDNA and at project appraisal were included in the final project, and subsequent sites were included under the additional financing. Each of the total 24 sites (phases 1 and 2) incorporated design enhancements or structural features that served the expected outcome, which was to provide improved and reliable road connectivity, along with increased resilience to climate change.

B. Effectiveness

43. The project is rated *effective*. The project had one output, namely the transport infrastructure in damaged locations on the Efate ring road reconstructed and climate- and disaster-proofed, and this was achieved.

²⁸ The incremental cost of adaptation to climate change was \$695,000.

44. The expected outcome of socioeconomic activities being restored to at least pre-TCP levels was also achieved. While the 2018 actual GDP of 2.9% was lower than the target 3.6%, it was still above the 2015 actual of 1.6%.²⁹

45. Community outreach efforts, including meetings and training sessions, were successful in achieving both community awareness-raising and a high rate of female participation. The project was delivered through systematic consultation, including participation by female community members formally as members of committees and informally as meeting participants. The economic benefits of the project in terms of employment opportunities were shared between women and men. All safeguard measures required by ADB and the country system were complied with and effectively implemented. The PMU and ADB provided training sessions for government staff and contractor employees on general safeguards and environmental management plan development, implementation, and monitoring.

C. Efficiency

46. The project is rated *efficient*. The project restored access to markets and social services and contributed to national economic recovery. The restored facilities contributed to poverty reduction by restoring and increasing the incomes of rural households and stimulating and re-igniting economic activity (e.g., tourism, local business development, and agricultural activities).

47. Emergency response projects that reinstate infrastructure with high sunk costs typically involve high economic returns. The recalculated economic internal rate of return for phase 1 is 13.8% compared to 15.6% identified during the feasibility study; and 18.8% compared to the 20.2% for phase 2, determined when additional financing was approved in 2017. Quantified benefits included the value of time savings, reduced spoilage of agricultural produce and loss of sales, reduction in crashes, tourism benefits, and the stimulus to the local economy from construction activities. The economic analysis is in Appendix 4.

48. The extension to the implementation period beyond the planned two years works against the efficiency rating of the project. The DEAP defines a standard 2-year implementation period for emergency assistance loans. Extensions beyond four years require the approval of the Vice President. At appraisal, all physical works were to be completed by the end of 2017. The actual completion date of 25 November 2019 represents a 47-month implementation period. The road sector interventions required the QCBS recruitment of external consultants to undertake topographic and geotechnical investigations; complete feasibility investigations and community consultations to address ADB due diligence requirements; secure all necessary permits; prepare detailed designs; administer an international competitive bid tender and supervise construction on multiple distant sites. Such interventions will take more than two years to implement. The original 2-year implementation period appears to respond to the DEAP policy limitations and did not adequately reflect the project's complexities or due diligence requirements. Nonetheless, what was delivered was of considerable and demonstrable economic value and social benefit and justifies the rating of *efficient*. The default 2-year DEAP project implementation period should not be considered a relevant basis upon which to consider the efficiency of the project.

²⁹ The project restored connectivity along the entirety of the (116.2 km) circumferential road, and by doing so restored connectivity for all adjoining urban (175 km) and other declared roads (100.8 km) across the total 392 km Efate road network.

D. Sustainability

49. The project is rated *likely sustainable* as the project outputs are likely to be maintained throughout the economic life of the assets. The project outputs involve predominantly concrete and steel structures that require minimal maintenance over their economic life. Less confidence exists in the provision of timely maintenance for the rehabilitated road sections that represent 7.4% of total project costs. All project outputs were well designed and constructed to a high-quality finish. The BBB features have enhanced resilience and will notionally reduce long-term operation and maintenance funding.

50. As the project roads do not earn revenue, no financial viability assessment was conducted. The government's commitment to increase financing for routine and periodic maintenance costs was loan covenanted, but annual maintenance allocations in 2020 (VT463 million) were less than in 2015 (VT493 million).³⁰ Community-based contractors cut grass and clear vegetation on road shoulders and verges, but no established periodic pavement (overlay) maintenance arrangements are in place. The PWD currently does not have the budget or the technical capacity to plan, prioritize, and deliver routine maintenance of double bitumen surface treatment pavements.

51. The 15-year Roads for Development Phase Two (R4D2) Program funded by the Government of Australia is helping the PWD to effectively plan, build, and maintain its road transport infrastructure. The program aims to fine-tune the operational skills of staff to independently operate the management systems developed under the program.³¹ The program has been contributing approximately VT200 million annually to road maintenance. The continued long-term engagement of development partners will remain important over the medium term to ensure Vanuatu extracts benefits from infrastructure investments over their intended economic life.

E. Development Impact

52. The development impact is rated *satisfactory*. The project delivered its intended impact: accelerated economic and social recovery in Vanuatu's TCP-affected provinces. Tourism sector businesses re-opened in response to restored connectivity.³² The project roads and bridges have fully restored access to education, social, and economic services. This has resulted in restoring and enhancing employment opportunities, household incomes, well-being, and living standards. The provision of improved quality structures with enhanced road safety features and increased climate resilience is especially valued by road users, most notably those most vulnerable to injury, including non-motorized transport users and pedestrians.

53. The impact on communities is positive. The CLCs gave communities a voice during the project option analysis and multicriteria analysis deliberations, and their views and needs were captured in improvements to subproject designs. Close consultation continued throughout the

³⁰ O&M budget allocations by year were: 2015–VT493.6 million, 2016–VT703.8 million, 2017–VT770.6 million, 2018–VT639.3 million, 2019–VT470.9 million, and 2020–VT463.3 million.

³¹ A Road Information Management System (RIMS) is used to store all asset condition data. ProMIS is used to manage individual road improvement and maintenance projects and provides live updates to RIMS. The project restored connectivity along the entirety of the (116.2 km) circumferential road, and by doing so restored connectivity for all adjoining urban (175 km) and other declared roads (100.8 km).

³² The post disaster assessment report reported that tourism-generated GDP as a percentage of overall GDP was 26% in 2002 and 33% in 2010. This increased to 48% in 2018. Source <https://knoema.com/atlas/Vanuatu>.

delivery of the project, with close discussion on the implementation of safeguards. These consultations secured public support, which facilitated timely approvals. Awareness-raising consultations improved understanding of flood behavior and the importance of preparation for extreme weather events. The awareness and prevention training on communicable diseases increased knowledge around personal protection and hygiene. About 48% of the participants in the project completion survey were women, who widely expressed the importance of the safe use and maintenance of project facilities.

F. Performance of the Borrower and the Executing Agency

54. The performance of the borrower and the line agencies is rated *satisfactory*. MIPU and PWD participated in deliberations, particularly regarding the establishment and functioning of the IWG and meetings when decisions were made on design features and work priorities. Both had sufficient experience in implementing infrastructure projects. Counterpart staff and funding were provided as required. The low turnover of project staff (from the client, consultant, and contractor) provided continuity of retained knowledge and helped improve efficiency in dealing with daily matters. Land access and use issues were addressed as promptly as possible. They were satisfactorily resolved in compliance with the project frameworks, land due diligence report, and both government and ADB safeguard requirements. Coordination among the various entities involved in implementation was effective. The PMU managed the implementation of the project efficiently. PWD's inability to locate as-built drawings suggests the need for ongoing capacity development assistance regarding document control and management.

G. Performance of Cofinanciers

55. The performance of the GEF is considered *satisfactory*. They engaged closely through the preparation of the annual project implementation reports.

H. Performance of the Asian Development Bank

56. ADB's performance was *satisfactory*. The project was processed and administered by the Pacific Liaison and Coordination Office with support from the Vanuatu Pacific Country Office. ADB staff provided timely support and guidance to expedite consultant recruitments and address implementation issues as they arose. ADB conducted regular review missions that provided input and comprehensive guidance to improve implementation, monitoring, and reporting. ADB approvals during design preparation, safeguard due diligence documentation review, procurement of civil works, processing of withdrawal applications, and time extensions were given in a timely manner. From a DEAP policy perspective, the closeout of physical works (particularly the completion of works outstanding, the completion and collection of as-built drawings, and verification of the completion of remedial works) may have been compromised by ADB's hesitation to extend the project beyond the 47-month duration.

I. Overall Assessment

57. The project is rated *successful*. For relevance, the emergency assistance loan financed an obvious need resulting from a disaster event. For effectiveness, the project outcome was largely achieved as connectivity across the island of Efate was fully restored, and the GDP growth target was nearly achieved. All project outputs were delivered. For efficiency, the project reinstated infrastructure with high sunk costs that typically involve high economic returns. For sustainability, the new waterway crossing infrastructure is likely sustainable given both the high-quality finish of the constructed assets and the more extreme design parameters associated with

the climate-proofing project goal. The table below shows the rating for each criterion and the overall rating.

Project Performance Ratings	
Criteria	Rating
Relevance	Highly relevant
Effectiveness	Effective
Efficiency	Efficient
Sustainability	Likely sustainable
Overall Assessment	Successful
Development impact	Satisfactory
Borrower and executing agency	Satisfactory
Performance of ADB	Satisfactory

Source: ADB.

IV. ISSUES, LESSONS, AND RECOMMENDATIONS

A. Issues and Lessons

58. Using line ministry project management units for implementation (i) enhanced government ownership, (ii) generated capacity improvements in administration, and (iii) facilitated the strong alignment of donor projects with Vanuatu's priorities.

59. The DSC complemented limited MIPU and PWD capacity during the post-disaster period and was effective in accelerating recovery. The demobilization of the DSC before the end of the defect liability period proved to be a costly error as the PMU failed to (i) collect all as-built drawings and (ii) require the contractor to complete the remaining works before the release of retention monies and expiry of the defect liability period.

60. The PMU's implementation of the communications and consultation plan was widely acknowledged as being very successful. Disciplined planning of the CLCs' engagements throughout all stages of project delivery improved the quality of designs and secured public support, which assisted in timely approvals.

61. The large works contract form of the *Fédération Internationale Des Ingénieurs-Conseils* (FIDIC) governed phase 1 works. The FIDIC small works contract form was by default used for phase 2 works as the works were less than \$10 million in value. The small works contract does not contain a mechanism by which parts of the works can be handed over for use by the principal. Contract form differences regarding the handover process for separable portions caused inefficiencies and confusion during contract administration.

62. The time management mechanisms of the FIDIC works contract will only be effective if the executing agency enforces the delay damages provisions. The quarterly progress reports did not adequately document the reasons for the delays or the justifications, nor did it establish a clear contractual path for the executing agency to impose delay damages. The quarterly progress reporting could have been improved to include an ongoing commentary on critical path cumulative delays. This would have resulted in more substantial documentation on the timeliness or

otherwise of contractor activity. This, in turn, may have assisted an executing agency decision to apply the FIDIC time control incentive mechanisms to achieve on-time project completion.

63. The arbitrary two-year implementation period, defined in accordance with the requirements of the DEAP, was inadequate. The DEAP states that emergency assistance loans should not involve detailed design and only be restricted to the transition phase for priority rehabilitation. The DEAP explicitly instructs that longer-term reconstruction should use the project loan modality. This emergency assistance project required detailed design services and involved longer-term reconstruction. The project involved time-consuming site investigations and detailed design for 24 separate subprojects/sites. It may have been more appropriately implemented using the sector or project loan modality.³³

B. Recommendations

64. **Establish an emergency response consultant framework agreement.** The urgency associated with the provision of emergency assistance loans can justify using the single-source selection method to expedite consultant recruitment or the use of limited international bidding to reduce the time to procure civil works. The recruitment of the DSC was a clear critical path item. A period of 15 months elapsed between the cyclone event and the signing of the DSC contract. A framework agreement (had these been possible at the time) could have enabled an appointment immediately following the disaster. A suitable consulting firm could have been selected based on the relative strength of the available team leader. The project implementation period could have been reduced by one year if a framework agreement existed in 2015.

65. **Focus on institutionalizing maintenance planning and prioritization.** The poor condition of the transport infrastructure before the disaster likely contributed to the vulnerability of the Efate ring road. The government's BBB approach has, to some extent, alleviated this problem in the short term. Operational funding support is needed for annual or semi-annual pavement condition (roughness) monitoring, so that pavement deterioration curves can be developed to identify the optimal timing of periodic pavement overlays. This data-driven analysis would provide PWD with a strong evidence base to justify increases in operations and maintenance budget allocations. Development partners need to continue working closely with PWD to develop internal maintenance planning capacity. All development projects must utilize (institutionalize) the asset and maintenance planning tools that reside in PWD.

66. **Covenants.** ADB should consider including a covenant in future loan and grant agreements that require independent engineering resources to verify contract completion before releasing retention monies.

67. **Further action or follow-up.** In-country ADB resources should follow up with the Ministry of Finance and Economic Management, PWD, and the contractor to verify that road marking and road signs are completed on the second lagoon to Rentapau road section.

68. **Timing of the project performance evaluation report.** The project outputs were completed in 2019. The Independent Evaluation Department can prepare the project performance evaluation report in 2023.

³³ Refer to para. 147 at <https://www.adb.org/documents/review-2004-disaster-emergency-assistance-policy>.

DESIGN AND MONITORING FRAMEWORK

Project Design and Monitoring Framework

Impact the Project is Aligned with:																											
Original Project																											
Accelerated economic and social recovery in Vanuatu's Cyclone Pam-affected provinces (defined by the PDNA) ^a																											
Overall Project																											
Unchanged																											
Results Chain	Performance Indicators with Targets and Baselines	Revised Performance Indicators with Target and Baselines	Achievement at Project Completion																								
Outcome	By 2018	By 2018 Current project																									
Current project Socioeconomic activities restored to at least pre-Cyclone Pam levels Overall project Unchanged	Current project a. GDP growth projection increased to 3.6% (2015 baseline: 2015 GDP growth is expected to decline to 1.4% from 4.6%) b. 130 km of road connected for road users to facilitate trade Overall project Unchanged	a. Unchanged b. Unchanged Overall project Unchanged	While the 2018 actual was lower than the target 3.6%, at 2.9% it was still above the 2015 actual of 1.6%. <table><tr><td></td><td colspan="2">GDP growth (%)</td></tr><tr><td>YEAR</td><td>forecast</td><td>actual</td></tr><tr><td>2015</td><td>4.1</td><td>1.6</td></tr><tr><td>2016</td><td>3.7</td><td>3.5</td></tr><tr><td>2017</td><td>3.8</td><td>4.4</td></tr><tr><td>2018</td><td>4.2</td><td>2.9</td></tr><tr><td>2019</td><td>3</td><td>3.9</td></tr><tr><td>2020</td><td>3</td><td>-8.5</td></tr></table> 392 km of road connected for roads users to facilitate trade. The project restored connectivity on the 116.2 km circumferential road, and by doing so restored connectivity for all adjoining urban (175 km) and other declared roads (100.8 km) across the total 392 km Efate Road network.		GDP growth (%)		YEAR	forecast	actual	2015	4.1	1.6	2016	3.7	3.5	2017	3.8	4.4	2018	4.2	2.9	2019	3	3.9	2020	3	-8.5
	GDP growth (%)																										
YEAR	forecast	actual																									
2015	4.1	1.6																									
2016	3.7	3.5																									
2017	3.8	4.4																									
2018	4.2	2.9																									
2019	3	3.9																									
2020	3	-8.5																									
Output Current project	By 2017 Current project	By 2017 Current project	By 25 November 2019, the following was achieved:																								
1.Transport infrastructure in damaged locations on Efate ring road reconstructed, and climate- and disaster-proofed Overall project Unchanged	1a. About 10 km of road rehabilitate	1a. Unchanged	16.2 km of road rehabilitated																								

	<p>1b. About eight stream crossings and their approach roads, abutments, and piers repaired and protected</p>	<p>1b. Unchanged</p>	<p>The 8 original water crossing locations included:</p> <ol style="list-style-type: none"> 1.Mele bridge – (\$2.2 m) new higher level steel truss bridge constructed 2.Prima Bridge – (\$0.36 m) – abutments protected 3.Creek Ai – (\$0.38 m) new multicell culvert replaced causeway 4.Marona - (\$2.4 m) new higher level steel truss bridge constructed 5.Lamin – (\$0.64 million) – new bridge constructed 6.Malatia – (\$0.13 m) - a new multicell culvert was built beside existing culvert 7.Pangpang – (\$0.055 m) bridge repaired with added safety features 8. Rentapau – (\$0.068m) bridge repaired with added safety features
	<p>1c. About nine bridges, box culverts, and causeways repaired for minor damages and debris cleared</p>	<p>1c. Unchanged</p>	<p>The 9 locations included:</p> <p>Eton dry creek – (\$0.086m) culvert constructed</p> <p>Eton beach – (\$0.052) culvert constructed</p> <p>La Cressonnaire – (\$0.01 m) pavement approaches repaired, and safety features (crash barriers) added</p> <p>Havana – (\$0.114 m) culvert constructed</p> <p>Tanaliu – (\$0.38 m) bridge replaced with triple cell culvert under Phase 2 work</p>

			<p>Sara – (\$0.117m) culvert constructed</p> <p>Epule – (\$2.3m) new bridge on improved alignment under Phase 2</p> <p>Epau – (\$0.051m) culvert constructed</p> <p>Neslep – (\$0.07m) culvert constructed</p>
	1d. About 200 m of river channel realigned upstream and downstream, and river training structures constructed	1d. Unchanged	Not determinable in absence of as-built drawings
	1e. About 1,000 m of sealed pavement protected against erosion from storm surges	1e. Unchanged	Onesua storm surge protection works involved 1.3km of linear protection over a 4 km distance.
	1f. About 8 km of roadside and crossroad drainage improved	1f. Unchanged	16.2 km of roadside and crossroad drainage was improved
	1g. About six culvert headwalls reconstructed	1g. Unchanged	10 culvert headwalls reconstructed (Havana, Creek Ai, Eton Dry Creek, La Cressonaire & Neslep)
	1h. About 250 m of guardrail reconstructed	1h. Unchanged	Not determinable in absence of as-built drawings
	1i. About 180 m of riverbanks protected	1i. Unchanged	Not determinable in absence of as-built drawings
	1j. Landslide at Klems hill (approximately 100 m x 50 m) reinstated	1j. Unchanged	Not determinable in absence of as-built drawings
	1k. Concrete longitudinal roadside drain at Klems hill (about 600 m long) improved	1k. Unchanged	Not determinable in absence of as-built drawings
	1l. 100% of construction workers and at least 80% of roadside inhabitants receive education on gender equality and HIV and AIDS awareness by the end of the project	1l. Unchanged	Achieved.
	1m. At least 30% of participants in all community	1m. Unchanged	27.5% participation by women was achieved across all consultations. 29.7% at

	consultations and training sessions are women	<p>Overall project</p> <p>By 2018</p> <p>1a-1m. Unchanged</p> <p>1n. 6 km of the Tassikiri road section rehabilitated</p> <p>1o. Management of Prima floodplain developed to manage the catchment near Prima Bridge</p> <p>1p. Tanoliu and Ulei bridges reconstructed</p> <p>1q. Drainage at Saama improved</p> <p>1r. Epule Bridge replaced (reconstruction instead of repairs)</p> <p>1s. Boreholes for the piles for the Marona Bridge driven down to at least 30 m</p>	<p>end of Feasibility Study consultations (see note)</p> <p>6km Tassiriki road section rehabilitated</p> <p>The new Waisisi culvert addressed the drainage needs of this floodplain.</p> <p>Tanaliu and Ulei bridges replaced with new culverts</p> <p>Saama culvert constructed</p> <p>Epule bridge constructed</p> <p>Boreholes driven to adequate depth to inform detailed design</p>
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Key Activities with Milestones

1. Project management and supervision

- 1.1 Recruit design supervision consultants (original Q4 2015, actual 6 July 2017)
- 1.2 Prepare inception report and an implementation plan (original Q1 2016, actual 29 July 2016)
- 1.3 Prepare & implement communication strategy and plan (original 2016–17, actual 16 August 2016)
- 1.4 Oversee environment management activities (original 2016–2017, actual 2016 to 2020)
- 1.5 Prepare project completion report (original Q1 2018, actual 16 January 2020)

2. Reconstruction of damaged infrastructure

- 2.1 Conduct topographical survey (original Q1 2016, actual 4 November 2016)
- 2.2 Conduct feasibility study (original Q1–Q2 2016, actual Phase 1 20 October 2016 & Phase 2 21 April 2017)
- 2.3 Prepare detailed engineering designs (original Q2–Q3 2016, actual Q2–Q3 2017)
- 2.4 Prepare bid documents (original Q4 2016, actual Q3 2017)
- 2.5 Carry out bidding and bid evaluation (original Q1 2017, actual Q3 2017)
- 2.6 Award civil works contracts (original Q1 2017, actual Phase 1 was 13 July 2017 and Phase 2 was 17 November 2017)
- 2.7 Reconstruct civil works (original Q1–Q4 2017, actual 9 October 2017–25 November 2019)

Inputs	
ADB	
Loan	Grant
ADF: \$1,000,000 (original)	ADF: \$7,000,000 (original)
ADF (DRF): \$2,805,000 (original)	ADF (DRF): \$2,805,000 (original)
COL: \$4,100,000 (additional) ^b	ADF: \$4,100,000 (additional) ^b
\$7,910,000 (final)	\$13,905,000 (final)
Global Environment Facility	Government
Grant	\$2,210,000 (original)
\$2,680,000 (original)	\$1,200,000 (additional)
\$2,680,000 (final)	\$3,410,000 (final) ^c
Assumptions for Partner Financing Original and Overall project At appraisal the ADB team considered that cofinanciers would express interest to meet the known funding shortfall for the Phase 2 scope of work. Cofinanciers did not express interest and ADB met the funding gap through additional financing.	

ADB = Asian Development Bank, ADF = Asian Development Fund, COL = concessional ordinary capital resources loan, DRF = Disaster Response Facility, GDP = gross domestic product, km = kilometer, m = meter, MIPU = Ministry of Infrastructure and Public Utilities, Q = quarter, TCP = Tropical Cyclone Pam.

Note: The drop in attendance through the latter part of the project was attributable to targeted women not attending the planned CLC meetings. Six (6) CLCs with women and youth representatives were established. Many consultations on land issues (Epule, Mele, Marona) involved just one or two men. Female participation as facilitators was 30% instead of the target 50%. On many occasions personal commitments clashed with scheduled meetings. Where female attendees were not available, meetings would proceed in the interests of achieving progress.

^a Government of Vanuatu. 2015. *Vanuatu Post-Disaster Needs Assessment: Tropical Cyclone Pam, March 2015*. Port Vila.

^b Grant funds were front-loaded.

^c Comprised taxes and duties of \$2,960,000 financed by the government through exemptions and \$450,000 as in-kind contribution for audit fees and counterpart staff.

Source: Asian Development Bank.

PROJECT COST AT APPRAISAL AND ACTUAL
(\$ million)

Item	Appraisal Estimate (Original Financing)			Revised Appraisal Estimate (Incl Additional Financing)			Actual		
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost
A. Investment Costs									
1. Civil Works	11.01	1.91	12.92	19.53	2.96	22.49	21.48	0.00	21.48
2. Consultants									
a. Design and Supervision	2.71	0.00	2.71	4.19	0.00	4.19	4.85	0.00	4.85
b. Environmental and Social Mitigation	0.10	0.00	0.10	0.23	0.00	0.23	0.21	0.00	0.21
c. Individual Consultant									
Subtotal (A)	13.82	1.91	15.73	23.95	2.96	26.91	26.54	0.00	26.54
B. Recurrent Costs									
1. Salaries	0.00	0.10	0.10	0.00	0.15	0.15	0.00	0.10	0.10
2. Office Accommodation	0.00	0.15	0.15	0.00	0.22	0.22	0.00	0.15	0.15
3. Audit Fee	0.00	0.05	0.05	0.00	0.08	0.08	0.00	0.20	0.20
Subtotal (B)	0.00	0.30	0.30	0.00	0.45	0.45		0.45	0.45
Total Base Costs (A+B)	13.82	2.21	16.03	23.95	3.41	27.36	26.54		
C. Contingencies									
1. Physical	1.60	0.00	1.60	0.00	0.00	0.00	0.00	0.00	0.00
2. Price	0.81	0.00	0.81	0.40	0.00	0.40	0.00	0.00	0.00
Subtotal (C)	2.41	0.00	2.41	0.40	0.00	0.40	0.00	0.00	0.00
Total (A+B+C)	16.23	2.21	18.50	24.35	3.41	27.76	26.54	0.45	26.99

Sources: ADB Appraisal Documents (Report and Recommendation of the President and Project Administration Manual Additional Financing); ADB calculations based on data received from the Vanuatu Government's project completion report & Loan and Grant Financial System.

PROJECT COST BY FINANCIER

Table A3.1: Project Cost at Appraisal by Financier (Original Financing)
(\$ million)

Item	COL		ADF Grant		DRF Loan		DRF Grant		GEF Grant		GOV		Total Cost	
	Amount	% of Cost Cat.	Amount	% of Cost Cat.	Amount	% of Cost Cat.	Amount	% of Cost Cat.	Amount	% of Cost Cat.	(Taxes and Duties)			
	{A1}	{A1/E}	{A2}	{A2/E}	{B1}	{B1/E}	{B2}	{B3/E}	{C}	{C/E}	{D}	{D/E}	E={A1+B1+B2+C+D}	F={D/18.5}
A. Investment Costs														
1. Civil works	0.85	6.58%	3.14	24.30%	2.35	18.19%	2.39	18.50%	2.28	17.65%	1.91	14.78%	12.92	69.84%
2. Consultants														
a. Design and Supervision	0.00	0.00%	2.71	100%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	2.71	14.65%
b. Environmental and Social Development	0.00	0.00%	0.10	100%	0.00	0.00%	0	0.00%	0.00	0.00%	0.00	0.00%	0.10	0.54%
Subtotal (A)	0.85	5.40%	5.95	37.83%	2.35	14.94%	2.39	15.19%	2.28	14.49%	1.91	12.14%	15.73	85.03%
B. Recurrent Costs														
1. Salaries	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.10	100%	0.10	0.54%
2. Accommodation	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.15	100%	0.15	0.81%
3. Audit Fees	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.05	100%	0.05	0.27%
Subtotal (B)	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.30	100%	0.30	1.62%
Total Base Cost (A+B)	0.85	5.30%	5.95	37.12%	2.35	14.66%	2.39	14.91%	2.28	14.22%	2.21	13.79%	16.03	86.65%
C. Contingencies	0.13	5.39%	1.05	43.57%	0.42	17.22%	0.42	17.22%	0.40	16.60%	0.00	0.00%	2.41	13.03%
D. Financial Charges During Implementation	0.02	33.33%	0.00	0.00%	0.04	66.67%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.06	0.32%
Total Project Cost (A+B+C+D)	1.00	5.41%	7.00	37.84%	2.81	15.16%	2.81	15.16%	2.68	14.49	2.21	11.95%	18.50	100%

ADF = Asian Development Fund, DRF = Disaster Response Facility, COL = Concessional Loan; GEF = Global Environment Facility, GOV = Government of Vanuatu.

Note: Numbers may not sum precisely because of rounding.

Source: ADB appraisal document (PAM Original Financing).

Table A3.2: Project Cost at Appraisal by Financier (Additional Financing)
(\$ million)

Project Components	COL		COL-DRF		COL-AF		ADF-Grant		ADF-DRF Grant		GEF Grant		ADF Grant AF		Government		Total Cost
	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	
	A	A/T	B	B/T	C	C/T	D	D/T	E	E/T	F	F/T	G	G/T	H	H/T	T
A. Investment Costs²																	
1. Civil Works																	
a. Civil Works -Original	0.93	6.67%	2.62	18.69%	0.00	0.00%	3.06	21.86%	2.81	20.02%	2.68	19.13%	0.00	0.00%	1.91	0.14	14.01
b. Civil Works – Additional ⁵	0.00	0.00%	0.00	0.00%	3.81	44.90%	0.00	0.00%	0.00	0.00%	0.00	0.00%	3.63	42.73%	1.05	12.38%	8.48
2. Consultants																	
a. Design and Supervision - Original	0.00	0.00%	0.00	0.00%	0.00	0.00%	3.71	100%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00	3.71
b. Design and Supervision - Additional	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.48	100.00%	0.00	0.00	0.48
c. Individual Consultants	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.23	100%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00	0.23
Subtotal (A)	0.93	3.47%	2.62	9.73%	3.81	11.11%	7.00	26.02%	2.81	10.42%	2.68	9.96%	4.10	11.37%	2.96	11.00%	26.91
B. Recurrent Costs⁶																	
1. Salaries	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.15	1.00	0.15
2. Office Accommodation	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.23	1.00	0.23
3. Audit Fee	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.08	1.00	0.08
Subtotal (B)	0.00	0.00%	0.00	0.00%	0.00		0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00		0.45	1.00	0.45
Total Base Cost (A+B)	0.93	3.42%	2.62	9.57%	3.81	11.11%	7.00	25.59%	2.81	10.25%	2.68	9.80%	4.10	11.37%	3.41	12.00%	27.36
C. Contingencies	0.05	12.66%	0.14	35.48%	0.21	51.86%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00	0.40
1. Physical	0.00	0.00%	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
2. Price ⁷	0.05	12.66%	0.14	35.48%	0.21	51.86%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00	0.40
D. Financial charges during implementation	0.01	10.56%	0.04	30.72%	0.08	30.72%	0.00		0.00		0.00		0.00		0.00	0.00	0.14
Interest During Implementation	0.01	100%	0.04	100%	0.08	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00	0.14
Total (A+B+C+D)	1.00	3.58%	2.81	10.05%	4.10	14.70%	7.00	25.09%	2.81	10.05%	2.68	9.61%	4.10	14.70%	3.41	12.00	27.90

ADF = Asian Development Fund, COL = concessional ordinary capital resources loan, COL-AF = concessional ordinary capital resources loan - additional financing, DRF = Disaster Response Facility, GEF = Global Environment Facility.

Note: Numbers may not sum precisely because of rounding.

Source: ADB appraisal document (PAM Additional Financing)

Table A3.3: Project Cost at Completion by Financier (Actual)
(\$ million)

Project Components	COL		COL-DRF		COL-AF		ADF-Grant		ADF-DRF Grant		GEF Grant		ADF Grant AF		Government		Total Cost
	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	Amt	% of Cost Cat.	
	A	A/T	B	B/T	C	C/T	D	D/T	E	E/T	F	F/T	G	G/T	H	H/T	T
A. Investment Costs																	
1. Civil Works	0.91	4.22%	2.55	11.86%	3.43	15.95%	2.60	12.09%	2.51	11.67%	2.39	11.24%	3.62	16.84%	3.47	16.13%	21.48
2. Consultants																	
a. Design and Supervision	0.00	0.00%	0.00	0.00%	0.00	0.00%	4.09	84.32%	0.18	3.71%	0.14	2.90%	0.44	9.07%	0.00	0.00%	4.85
b. Environmental and Social Development	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.21	100%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00	0.21
c. Individual Consultants	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00	0.00
Subtotal (A)	0.91	3.43%	2.55	9.60%	3.43	12.93%	6.90	26.0%	2.69	10.14%	2.53	9.53%	4.06	15.3%	3.47	13.07%	26.54
B. Recurrent Costs																	
1. Salaries	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.10	100%	0.10
2. Office Accommodation	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.15	100%	0.15
3. Audit Fee	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.20	100%	0.20
Subtotal (B)	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.45	100%	0.45
Total Base Cost (A+B)	0.91	3.40%	2.55	9.37%	3.43	12.70%	6.90	25.60%	2.69	10.00%	2.53	9.37%	4.06	15.04%	3.92	14.52%	26.99
C. Contingencies	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.46	100%	0.00
1. Physical	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00
2. Price	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00
D. Financial charges during implementation	0.01	16.67%	0.03	50%	0.02	33.33%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.06
Interest During Implementation	0.01	16.67%	0.03	50%	0.02	33.33%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.06
Total (A+B+C+D)	0.92	3.34%	2.58	9.38%	3.45	12.54%	6.90	25.08%	2.69	9.78%	2.53	9.20%	4.06	14.76%	4.38	15.92%	27.05

ADF = Asian Development Fund, COL = concessional ordinary capital resources loan, COL-AF = concessional ordinary capital resources loan - additional financing, DRF= Disaster Response Facility, GEF = Global Environment Facility.

Note: Numbers may not sum precisely because of rounding.

Source: Asian Development Bank and the Vanuatu Government's project completion report.

ECONOMIC ANALYSIS

1. **Disaster impacts:** Cyclone Pam hit Vanuatu in March 2015, resulting in widespread damage in the larger islands of Tanna, Erromango, and Efate. On the main island of Efate, where the capital Port Vila is located, damage to transport infrastructure hindered the delivery of critical supplies to, and disrupted economic activities in, the more isolated communities. A post-disaster needs assessment (PDNA) showed that the 116-kilometer Efate circumferential or ring road sustained damages to waterway crossings and pavement sections at 19 sites. With no radial roads across the island, the damaged road sections constrained access to population and service centers, with consequent social and economic impacts on the island's population of 85,000.

2. **Project scope:** The Asian Development Bank (ADB) approved the Cyclone Pam Road Reconstruction Project (the project) in November 2015 to support the reconstruction and climate- and disaster-proofing of the Efate circumferential road.¹ Phase 1 under the original project addressed 17 of the 19 sites identified in the PDNA for reconstruction and repair. Further investigations of the Efate ring road identified an additional three drainage structures requiring replacement. More extensive geotechnical and hydrological investigations also led to a decision to replace rather than repair two bridges. These five sites and an additional road section were included in Phase 2 of the project, financed by additional financing approved by ADB in 2017. In total, 24 subprojects—18 under Phase 1 and 6 under Phase 2—have been supported by the project.

3. **Demand analysis.** At appraisal in August 2016, traffic counts were conducted at three locations on the Efate ring road at: (i) Mele, northwest of Port Vila; (ii) Rentapau, southwest of Port Vila; and (iii) Takara on the east coast. Traffic counts covered seven types of motorized vehicles, along with non-motorized (e.g., bicycles) and pedestrians. Table A4.1 presents the results of the 2016 traffic count for motorized vehicles. These traffic counts were used in the economic analysis of Phase 1 subprojects.

Table A4.1: Traffic counts by vehicle type, annual average daily traffic, 2016

Station	Motorbike	Car	Bus / Van	Pickup / 4WD	Truck	Total
Mele	40	647	1,875	929	881	4,372
Rentapau	11	56	444	145	79	735
Takara	2	20	75	38	33	168

4WD = four wheeldrive.

Source: ADB estimates.

4. Further, during appraisal for the project's additional financing in 2017, traffic counts at Takara were used for four Phase 2 rural upgrade locations (Epule, Saama, Tanaliu, and Ulei) that were not specifically covered by the Phase counts. Traffic counts at Takara were deemed representative of the level of traffic flows in the four rural locations. For the additional road section under Phase 2 (Tassiriki)—which was also not covered by the 2016 traffic count—volumes were estimated based on intersection peak hour camera recordings of traffic flows at intersections at the south and north of the section. Peak hour traffic results were then adjusted by a 6.0 expansion factor to estimate daily volumes traveling the road section's entire length. However, this methodology appears to have resulted in a substantial overestimate of traffic volumes, as the resulting count of 14,670 annual average daily traffic (AADT) is unrealistically high for a two-lane road such as Tassiriki.

¹ ADB. [Vanuatu: Cyclone Pam Road Reconstruction Project](#).

5. In November 2020, the Public Works Department collected traffic count information for entry into their Roads Information Management System (RIMS). Table A4.2 compares the latest actual AADT with the traffic counts conducted in 2016. The results show that 2020 traffic volumes have been lower in Mele (by about 34%) and Rentapau (by 9%), but higher in the 4 rural locations upgraded under Phase 2 (by an average of 64%). For Tassiriki, 2020 traffic counts show about 3,000 AADT, which is more realistic for a two-lane road compared to the overestimated figure derived during appraisal.

Table A4.2: Traffic Counts, annual average daily traffic, 2016 vs. 2020

Subproject	Appraisal (2016)	Latest (November 2020)
Mele (Prima)	4,372	2,885
Rentapau	735	668
Takara (4 rural locations)	168	275
<i>Tanaliu</i>	168	290
<i>Ulei</i>	168	290
<i>Epule</i>	168	300
<i>Saama</i>	168	220
Tassiriki	14,670	3,000

Note: The large discrepancy for Tassiriki likely reflects an error during the traffic count exercise conducted during appraisal, as the resulting figure is unrealistically high for a two-lane road.

Source: ADB estimates.

6. It is essential to note that the impacts of Vanuatu's border closure due to the coronavirus disease (COVID-19) pandemic have undoubtedly constrained traffic volumes observed during the 2020 count. This is particularly true for urban sections, such as Mele and Tassiriki—where tourists would have added to traffic volumes in the absence of travel restrictions—and to a lesser extent in Rentapau, which provides access to some tourism sites. Also, as traffic growth is partly determined by gross domestic product (GDP) growth (along with population expansion and increases in vehicle ownership, among others), the COVID-19-induced economic contraction in 2020 and the likely further decline in 2021 is seen to constrain traffic growth at least in the near-term. Thus, valuation of benefits in this economic re-evaluation accounts for the observed traffic flows at project completion based on the 2020 counts and adjusts traffic growth projections in line with Vanuatu's weaker near-term economic prospects due to COVID-19 impacts.

7. **Phase 1 economic modeling:** Economic analysis of Phase 1 of the project covers the 19 sites for reconstruction and repair as identified in the PDNA. This included eight bridges, two road segments (plus various minor works on the ring road, and nine culverts. Economic modeling compares a “with the project” scenario of selecting a preferred alternative from a menu of (i) low investment–high maintenance, (ii) medium investment and maintenance, and (iii) high investment–low maintenance cost options against a “without project” case of minimum investment. A “do nothing” base scenario was deemed unrealistic given the extensive damage wrought by Cyclone Pam. The analysis was conducted based on a world price numeraire, at constant 2020 prices. Project investments are assumed to have an economic life of 20 years.

8. Actual financial costs incurred under Phase 1—adjusted to 2020 prices—inclusive of construction, operation, and maintenance expenses were converted to economic costs by applying a standard conversion factor (SCF) of 0.926 to non-traded components and a shadow

wage rate factor (SWRF) of 0.750 to unskilled labor components.² Economic costs of the project exclude price contingencies, taxes, duties, royalties, and subsidies. The actual contract price for Phase 1 works was \$12.19 million, or about \$0.21 million lower than the initial cost estimate of \$12.40 million during appraisal. Projected annual and periodic operations and maintenance costs are adjusted to align with the lower actual investment costs. Conversely, the actual construction period spanned 25.5 months during 2017–2019, compared with the ambitious 1-year construction phase assumed in the ex-ante economic analysis.

9. The transport investments under Phase 1 have generated positive flows on the benefits side by avoiding road closures. Quantified direct benefits include:

- a. **Value of time savings:** The number of days saved per annum is the difference in road closure days between the without- and with-project scenarios. Avoided road closures of between 0.5 to 2.0 days per specific site, assumed at appraisal remain valid at completion as there have been minimal road closures during the early stages of project life and the investments adhere to appropriate design standards. Higher design standards have contributed to efficient and robust rebuilt structures and reduced road closures. The number of days saved per annum, multiplied by the value of time (i.e., a function of the minimum wage in Vanuatu of about 38,720 vatu per month as of 2020³) and the number of travelers on a defined road link, produces the overall time savings benefits. As these benefits are non-traded, the SCF is also applied to time savings. It is assumed that around half of travelers are unskilled workers and this portion of time savings is further adjusted by the SWRF.
- b. **Agriculture benefits:** These derive from (i) reducing spoilage and loss of fresh produce sales; and (ii) reducing the number of road closure days per annum, with an estimated reduction of two days per annum for rural agricultural areas. An estimate of \$67,607 per day of agricultural production as of 2020 was applied—based on a 2015 International Finance Corporation (IFC) estimate of \$52,015, adjusted by the observed growth in nominal value added in Vanuatu's agriculture sector—and grown at a conservatively low rate of 2% per annum.

10. Further, Phase 1 subprojects are expected to result in indirect benefits that are separate and non-overlapping with the direct benefits discussed above. These mainly involve benefits accruing to Vanuatu's significant tourism industry. In 2011, Vanuatu's considerable tourism industry generated about \$135.0 million in annual value-added. Applying actual GDP growth figures over the intervening period would amount to about \$150.5 million by 2020.⁴ Note that with COVID-19 travel restrictions prevailing during 2020, tourism benefits are understated compared to a counterfactual scenario where Vanuatu's recent record of tourism growth had continued. An efficient and reliable road system is a key prerequisite for dynamic and inclusive tourism. However, with no available empirical estimate of the transport sector's contribution to tourism

² This standard conversion factor is the inverse of the latest available (as of 2015) shadow exchange rate factor calculated by ADB's Economic Research and Regional Cooperation Department for Vanuatu (1.08), while the shadow wage rate factor is consistent with the estimate used during appraisal of Phase 2. Economic modeling at appraisal also applied the same factor (0.893) as both a standard conversion factor as well as a shadow wage rate factors for both skilled and unskilled labor, due to "limited available labor cost estimates".

³ At appraisal, the minimum wage used was 30,000 vatu per month, which was prevailing in Vanuatu during 2016. Adjusted for movements in the general price level as measured by the relative consumer price indexes between 2016 and 2020, the minimum wage is estimated to have increased to 34,680 vatu per month in real terms as of 2020.

⁴ This method is used in the absence of input-output tables for Vanuatu's economy and yields a 2016 estimate of tourism value-added of around \$148.5 million, quite close to the International Finance Corporation's survey-based figure of \$145 million (<https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16674>).

development, the analysis conservatively assumed that tourism benefits amounting to 0.1% of Vanuatu's annual tourism sector value-added can be derived from restoring the road system in Efate, one of the country's main tourist hubs. Tourism benefits are grown at 2% per annum over the economic assessment period.

11. Indirect benefits also arise from the stimulus that construction activity can provide to the local economy. At appraisal, the local bridge engineers and procurement experts estimated that 10% of construction costs for bridge replacement and road improvements would be spent in the local area. This proportion of spending feeds into the local economy through a multiplier effect. A multiplier of 0.6 is adopted based on estimated multipliers for comparable Pacific island economies in the absence of input-output tables for Vanuatu's economy.⁵ The relatively low multiplier reflects high import leakage in Pacific economies, including Vanuatu, where most materials, equipment, and consumer goods are sourced from overseas. To be even more conservative in estimation, it is assumed that only 50% (i.e., roughly equivalent to the share of non-traded and labor components in construction costs) of expected multiplier impacts are realized and flow through the domestic economy. The bulk of these benefits are generated during the initial construction phase. Further contributions to the local economy are generated in succeeding years through investments in the annual and periodic maintenance cycle. As a stimulus to the local economy is non-traded, the SCF is also applied to these benefits.

12. **Phase 1 economic analysis results:** Based on the actual costs and benefits discussed above, the ex-post economic analysis re-evaluation conducted at project completion resulted in a base case economic internal rate of return (EIRR) of 13.8% (Table A4.3). This is lower than the ex-ante base case EIRR of 15.1% at appraisal primarily because of (i) the longer actual construction period; (ii) lower projected traffic growth in the near-term due to the impacts of COVID-19 travel restrictions; (iii) slightly lower time savings estimates despite the growth in Vanuatu's minimum wage between appraisal and completion—amid the offsetting impacts of actual traffic counts underperforming in urban areas while overperforming in rural areas—with the correct application of shadow pricing; and (iv) more conservative estimation of indirect benefits both from tourism and local stimulus. Conversely, growth in agriculture resulted in slightly larger-than-expected benefits in this sector. At the same time, investment cost savings along with the resulting reduction in annual and periodic operations and maintenance costs contributed positively to the EIRR at completion. However, these were not enough to offset the factors negatively impacting the EIRR. The residual value of Phase 1 subprojects is estimated at \$2.0 million. As the resulting ex-post EIRR is above the economic opportunity cost of capital (EOCC) at the time of investment of 12.0%, Phase 1 is therefore considered economically viable.

13. **Phase 1 sensitivity analyses.** The ex-post EIRR for Phase 1 is at risk of falling below 12% with a 20% reduction in benefits (Table A4.4). The switching value shows that benefits can be about 10.5% lower than projected in the ex-post analysis and still retain economic viability. Thus, if actual demand or traffic growth over the investments' economic lifespan substantially falls short of projections, Phase 1 can become unviable. However, the ex-post base case analysis already factors in the likely impact of the COVID-19-induced economic downturn on traffic growth. Prospects for economic recovery from the pandemic are also conservatively assumed to be gradual, translating to a modest eventual rebound in traffic growth.

⁵ ADB. 2009. [*Taking the Helm: A Policy Brief on a Response to the Global Economic Crisis*](#). Manila. ADB analysis shows that private consumption and investment multipliers in Fiji are in the order of 0.7, likely higher for government consumption, while for Tonga multipliers are likely to be higher than 0.5. Given that the imports-to-GDP ratio in Vanuatu (31.2% as of 2020) is higher than in Fiji (19.4%) but lower than in Tonga (41.8%), the relevant in Vanuatu is also likely in between those estimated for the other two Pacific economies.

14. Further, both the ex-ante and ex-post analyses adopted a conservative approach wherein traffic growth moderated gradually by 1.0% every five years to account for possible corresponding easing in GDP growth over the longer term. As the key assumption of tying demand (traffic growth) to economic prospects remains valid, the conservative approach adopted in the re-appraisal means that actual benefits are unlikely to fall short of ex-post projections, safeguarding economic viability. On the contrary, the corresponding switching value for operating and maintenance costs shows that these can be more than double in cost relative to base case projections and Phase 1 can still be viable. With construction costs coming in under budget and the economic analysis correctly accounting for annual maintenance costs and the more substantial and critical provisions for periodic maintenance, future cost overruns are also considered unlikely.

Table A4.3: Summary of Economic Costs and Benefits, Phase 1 Re-Evaluation (\$ '000)

Year	Capital Costs	O&M Costs	Time savings	Agriculture benefits	Tourism benefits	Local stimulus	Net benefits
2017	(2,166.4)	28.1	0.0	0.0	0.0	195.3	(1,943.0)
2018	(3,284.7)	16.0	361.6	97.5	108.5	289.8	(2,411.3)
2019	(2,458.4)	7.0	516.4	139.3	155.0	212.0	(1,428.7)
2020	0.0	369.8	520.9	137.9	158.1	1.9	1,188.7
2021	0.0	8.1	488.9	140.7	161.3	1.7	800.7
2022	0.0	12.6	466.9	143.5	164.5	1.9	789.4
2023	0.0	18.6	501.9	146.4	167.8	3.0	837.6
2024	0.0	12.6	532.0	149.3	171.1	1.9	867.0
2025	0.0	8.1	558.6	152.3	174.6	1.7	895.3
2026	0.0	12.6	586.6	155.3	178.1	1.9	934.4
2027	0.0	8.1	615.9	158.4	181.6	1.7	965.8
2028	0.0	(189.9)	646.7	161.6	185.2	36.0	839.6
2029	0.0	8.1	679.0	164.8	189.0	1.7	1,042.7
2030	0.0	12.6	706.2	168.1	192.7	1.9	1,081.5
2031	0.0	8.1	734.4	171.5	196.6	1.7	1,112.4
2032	0.0	12.6	763.8	174.9	200.5	1.9	1,153.7
2033	0.0	5.4	794.3	178.4	204.5	3.7	1,186.4
2034	0.0	12.6	826.1	182.0	208.6	1.9	1,231.2
2035	0.0	8.1	850.9	185.6	212.8	1.7	1,259.2
2036	0.0	12.6	876.4	189.3	217.0	1.9	1,297.3
2037	0.0	8.1	902.7	193.1	221.4	1.7	1,327.1
2038	0.0	1,281.8	929.8	197.0	225.8	30.4	2,664.8
2039	0.0	8.1	957.7	200.9	230.3	1.7	1,398.8
						EIRR	13.8%
						ENPV	\$693.0

EIRR = economic internal rate of return, ENPV = economic net present value, O&M = operations and maintenance.

Note: Economic costs and benefits are evaluated against a "minimum investment" scenario, as a "do nothing" scenario is unrealistic given the state of the roads and other transport assets after Cyclone Pam.

Source: ADB estimates.

Table A4.4: Phase 1 Sensitivity Analyses Results

Scenario	Appraisal Ex-Ante	Completion Ex-Post
Base case	15.1%	13.8%
Costs + 20%	12.0%	13.6%
Net benefits - 20%	11.4%	10.4%
Costs +20% and net benefits -20%	8.9%	10.1%

Note: For the ex-post analysis, 20% cost overruns are only applied to operating and maintenance costs, with actual investment costs already final.

Source: ADB estimates

15. **Phase 2 economic modeling:** Economic analysis for additional financing of the project covered the six subprojects, including the construction of culverts in Saama, Tanioliu, and Ulei; bridge replacements in Prima and Epule; along with a new road section in Tassiriki. A similar approach was applied to compare the “with project” scenario with a minimum investment “without project” scenario. For Phase 2 investments, the design life was assumed to be 30 years. The analysis was conducted in 2020 constant prices and on the basis of a domestic price numeraire.

16. The subprojects’ financial costs excluding price contingencies, taxes, duties, royalties, and subsidies were adjusted to 2020 prices and converted to economic values by applying a shadow exchange rate factor of 1.08 (e.g., the inverse of the standard conversion factor applied for Phase 1) for tradable components, and a shadow wage rate factor of 0.75 for the unskilled labor component (footnote 2). The actual contract price for Phase 2 works was 858 million vatu (equivalent to \$7.4 million), resulting in cost savings of about 164 million vatu (\$1.4 million) from the initial cost estimate of 1,022 million vatu (\$8.8 million) during appraisal. However, the actual construction period spanned 21.4 months compared with the 1-year assumed at appraisal.

17. Economic benefits were evaluated from road users’ incremental and non-incremental demand, using updated unit values at project completion. Quantified net benefits considered:

- a. **Vehicle operating costs (VOC):** Reductions in VOC are based on estimated road international roughness index (IRI) conditions (generally good: 3–5) before the project and road conditions at project completion (IRI 2). Table A4.5 shows the weighted average VOCs (vatu per vehicle-km.) calculated for Prima (56.9), Tassiriki (38.2), and the rural sites (56.9) using the Highway Development and Management Model (HDM4). Improvements to the road surface through the upgrades are estimated to have resulted in 1%–5% improvements in VOC.

Table A4.5: Vehicle Operating Costs (vatu per vehicle kilometer)

Vehicle type	Prima		Tassiriki		Rural roads	
	VOC	%	VOC	%	VOC	%
Motorcycle	5.8	0.9%	6.1	1.0%	6.5	1.2%
Car	11.3	14.8%	11.9	23.5%	13.2	11.9%
Van	21.2	42.9%	22.4	48.6%	21.0	44.6%
Pickup	65.4	21.3%	68.9	22.3%	63.4	22.6%
Truck	144.6	20.1%	152.5	4.6%	145.0	19.6%
Weighted avg.	56.9		38.2		56.9	

VOC = vehicle operating costs.

Source: ADB estimates.

- b. **Time savings:** The upgrade works involved improvements to two-lane roads and bridges. Minor vehicle speed improvements (5 kilometers per hour) were achieved. The provision of improved sight lines, additional intersection capacity, and an improved road surface allowed for smoother traffic flow within urban and through rural areas. The weighted average value of travel time for Prima (572 vatu per hour), Tassiriki (634), and rural sites (582) was estimated based on traffic composition, the minimum wage (220 vatu per hour as of 2020 [para. 9a] and footnote 3), and a 10% adjustment to freight vehicles to capture the perishable nature of goods. As in Phase 1, it is assumed that half of travelers are unskilled workers whose time savings are adjusted by the SWRF.
- c. **Flood immunity:** With upgrades addressing local flooding impacts, the frequency and duration of road closure or detour was expected to be reduced. Benefits are based on the frequency of flooding observed, calculated road closure times, and length of average

detour routes and speeds, and the expected annual delay. For Tassiriki, reductions in annual flood damages to properties were also considered. In the absence of valuation data for residences, only damages to commercial properties were considered using average rental costs per square meter per month (1,586 vatu) and an estimated reduction in the likelihood of inundation from 50% without the project to 10% at project completion.

- d. **Crash costs:** Community consultation identified infrequent crashes at Epule and Tanoliu. A crash rate of 0.33 crashes per 100,000 vehicle kilometers traveled was assumed based on average annual daily traffic. For Tassiriki, it was assumed that the road would have a similar crash rate to other major roads within the central business district of 0.17 crashes per 100,000 vehicle kilometers traveled. Better road safety through improved sight lines, design, and signage resulted in a 50% reduction in crash rate in rural sites and a 20% reduction in Tassiriki. At appraisal, benefits were valued using an average crash cost value of 557,762 vatu, derived by applying the ratio of estimated crash costs to average weekly earnings in New South Wales, Australia, to average weekly earnings in Vanuatu.⁶ This figure was adjusted at project completion based on the increase in Vanuatu's minimum wage (para. 9a), and the resulting average crash cost value for 2020 of 721,810 vatu was used for this economic re-evaluation.
- e. **Greenhouse gas emissions:** Due to the incremental traffic generated by the project, the project was seen to result in increased greenhouse gas emissions. These additional economic costs or negative benefits were valued at 4,123 vatu per ton of CO2 emissions, consistent with *ADB's Guidelines for the Economic Analysis of Projects*.

18. **Phase 2 economic analysis results:** Based on the actual costs and benefits at project completion, the ex-post economic analysis re-evaluation resulted in a base case economic internal rate of return (EIRR) of 18.8% (Table A4.6), below the ex-ante base case EIRR of 22.1% at appraisal. The reduction was again mainly due to the impacts of the longer actual construction period; projected near term reductions in traffic growth related to COVID-19 travel restrictions; and slightly lower time savings despite the increase in Vanuatu's minimum wage, which also resulted in higher estimates of crash cost benefits, with the correct application of the SWRF to a portion of these benefits. Investment cost savings contributed positively to the EIRR at completion, but this was not enough to compensate for reductions caused by the other factors. Nonetheless, with the resulting ex-post EIRR is above the EOCC at the time of investment of 12.0%. The economic viability of Phase 2 investments is therefore also established.

Table A4.6: Summary of Economic Costs and Benefits, Phase 2 Re-Evaluation (vatu million)

Year	Capital Costs	O&M Costs	VOC savings	Time savings	Flood immunity	Avoided crash costs	GHG emissions	Net benefits
2018	(342.3)	0.0	0.0	0.0	0.0	0.0	0.0	(342.3)
2019	(433.1)	18.5	37.1	52.5	36.1	3.2	(0.5)	(286.2)
2020	(114.3)	0.7	6.6	37.6	11.0	0.8	0.0	(57.4)
2021		0.7	9.3	49.3	12.2	1.0	(0.1)	72.4
2022		0.7	10.5	60.5	13.6	1.1	(0.1)	86.3
2023		0.7	11.8	71.7	14.9	1.2	(0.1)	100.3
2024		4.6	13.0	82.9	16.3	1.4	(0.1)	118.0
2025		0.7	14.2	94.1	17.7	1.5	(0.1)	128.1
2026		108.9	15.5	105.3	19.1	1.6	(0.1)	250.3

⁶ At the time of appraisal, average crash costs in New South Wales Australia were A\$97,987 against weekly earnings of A\$1,553.

2027		0.7	45.2	146.0	48.3	4.5	(0.1)	244.7
2028		0.7	46.4	147.2	49.7	4.7	(0.1)	248.6
2029		(1.6)	47.7	148.5	51.0	4.8	(0.2)	250.2
2030		0.7	48.9	149.7	52.4	4.9	(0.2)	256.6
2031		0.8	50.1	151.0	53.8	5.0	(0.2)	260.6
2032		0.7	51.4	152.2	55.1	5.2	(0.2)	264.5
2033		0.7	52.6	153.5	56.4	5.3	(0.2)	268.4
2034		2.6	53.8	154.7	57.8	5.4	(0.2)	274.2
2035		0.7	55.1	156.0	59.1	5.5	(0.2)	276.3
2036		93.0	56.3	157.2	60.5	5.7	(0.2)	372.5
2037		0.7	57.6	158.4	61.8	5.8	(0.2)	284.2
2038		0.7	58.8	159.7	63.2	5.9	(0.2)	288.1
2039		(2.0)	60.0	160.9	64.6	6.0	(0.2)	289.4
2040		0.7	61.3	162.2	65.9	6.2	(0.2)	296.1
2041		1.3	62.5	163.4	67.3	6.3	(0.2)	300.6
2042		0.7	63.8	164.7	68.7	6.4	(0.2)	304.1
2043		0.7	65.0	165.9	70.1	6.5	(0.2)	308.1
2044		0.7	66.3	167.2	71.5	6.7	(0.2)	312.1
2045		0.7	67.6	168.4	72.9	6.8	(0.2)	316.2
2046		4.6	68.8	169.7	74.3	6.9	(0.2)	324.0
2047		0.7	70.1	171.0	75.7	7.1	(0.3)	324.3
2048		0.7	71.3	172.2	77.1	7.2	(0.3)	328.4
EIRR								18.8%
ENPV								520.7

EIRR = economic internal rate of return, ENPV = economic net present value, GHG = greenhouse gas, O&M = operations and maintenance.

Note: Economic costs and benefits are evaluated against a “minimum investment” scenario, as a “do nothing” scenario is unrealistic given the state of the roads and other transport assets after Cyclone Pam.

Source: ADB estimates.

19. **Phase 2 sensitivity analyses.** The ex-post EIRR for Phase 2 remains robust against a 20% operating and maintenance cost overrun, a 20% reduction in benefits, or even a simultaneous adverse shock (Table A4.7). Switching values confirm net benefits can be up to 44.1% lower than projected in the ex-post analysis and the Phase 2 EIRR will remain above the 12.0% EIRR threshold. As per the Phase 1 re-appraisal, the Phase 2 traffic growth and therefore VOC and travel time benefits are projected using a conservative approach that: (i) captures COVID-19 economic impacts on demand; and (ii) assumes a gradual rebound in traffic volumes during the recovery phase, with a steady easing in traffic growth thereafter over the longer-term. With flood immunity and crash costs likewise conservatively estimated—and the negative benefits from additional greenhouse gas emissions due to incremental traffic fully accounted for—a scenario where actual benefits fall substantially below projections is highly unlikely. A 20% overrun in operating and maintenance costs only results in a marginal reduction in the EIRR. With both annual and periodic costs already fully captured by the model—any future overruns are unlikely to be large enough to compromise economic viability.

Table A4.7: Phase 2 EIRRs

Scenario	Appraisal Ex-Ante	Completion Ex-Post
Base case	20.2%	18.8%
Costs + 20%	17.4%	18.6%
Net benefits - 20%	16.8%	15.9%
Costs +20% and net benefits -20%	14.5%	15.7%

EIRR = economic internal rate of return.

Note: For the ex-post analysis, 20% cost overruns are only applied to operating and maintenance costs, with actual investment costs already final.
Source: ADB estimates.

20. **Economic efficiency of the overall project:** Overall, the emergency project is rated as *efficient*. The respective ex-post EIRRs for Phase 1 (13.8%) and Phase 2 (18.8%) are each higher than the applicable EOCC at the time of investment of 12.0%.⁷ Further, as the EIRR at completion for Phase 2 is above 18%, investments included in this phase can be rated as highly efficient. The project restored access to markets and social services and contributed to Vanuatu's economic recovery from Cyclone Pam. The restored facilities also contributed to poverty reduction by restoring or even increasing incomes of rural households and stimulating and re-igniting economic activity (e.g., tourism, local business development, and agricultural activities. Moreover, unquantified benefits including (i) improved reliability and safety for short-distance non-motorized traffic; (ii) improved safety for both vehicles and pedestrians in densely populated areas through the provision of footpaths, pedestrian crossings, and bridges with footpaths, crash barriers, and hand rails; (iii) improved serviceability of bridges facilitating increased agricultural production and safeguarding the expansion of tourism; and (iv) reduced risk of flood damage to structures, approach roads, crops, and upstream buildings in close proximity to the waterways as a result of bridges constructed as higher-level structures and with wider spans further bolster the project's demonstrated efficiency of resource use.

21. **Project sustainability.** Project outputs are likely to be maintained throughout the economic life of the assets, as these are predominantly concrete and steel structures that require minimal maintenance. All project outputs were well designed and constructed to a high-quality finish. However, there remains some uncertainty about the provision of timely maintenance for the rehabilitated road sections that represent 7.4% of total project costs. The project's BBB features have enhanced resilience and will notionally serve to reduce the long-term operation and maintenance funding burden. On balance, these factors suggest the project can be considered likely sustainable, with assets likely to be adequately maintained through their expected economic life.

⁷ As the respective economic analyses for Phases 1 and 2 were conducted using differing numeraires (paras. 3 and 8), combining cost and benefit flows is not straightforward and hence an overall project EIRR cannot be calculated.

GLOBAL ENVIRONMENT FACILITY TERMINAL EVALUATION REPORT

A. Global Environment Facility Background

1. Flash flooding is by far the most serious climate-related concern for Port Vila. During flash floods, runoff from downpours cause flooding and severely impacts vehicular and pedestrian traffic in the city, with consequent financial and economic losses. Road debris (silt, chemicals, and waste) quickly reach the sea damaging the marine environment. The following structural and institutional barriers were reported to limit the government's capacity to respond to these climate change threats: (i) inadequate and aging infrastructure; (ii) limited experience of authorities with community mobilization, and (iii) limited capacity to design and establish sustainable urban drainage systems. In this context the GEF committed Least Developed Country Fund (LDCF) resources to protect urban areas in Vanuatu against the impacts of climate change and to ensure the building back after Cyclone Pam is climate resilient.¹

2. The objective of the *Protecting Urban Areas Against the Impacts of Climate Change in Vanuatu Project* (the project) was to reduce vulnerability and increase resilience to climate change hazards in urban areas and the transport sector. The project outcomes include: (i) the urban road infrastructure is climate proofed; (ii) climate resilience integrated into post Tropical Cyclone (TC) Pam recovery efforts; (iii) climate-resilient, sustainable urban drainage implemented at urban sub-catchments; and (iv) technical assistance provided and capacity developed. Twelve independent outputs involving the *Cyclone Pam Road Reconstruction Project* (CPRRP)² and the *Port Vila Urban Development Project* (PVUDP)³ serviced the four target outcomes.

3. **Climate proofed** in this project context means designed to withstand more intense and frequent rainfall and rainfall and sea-level generated flood events due to climate change. The Commonwealth Scientific and Industrial Research Organization in 2015 projected rainfall intensities in the Port Vila area under a worst-case climate change scenario to increase by 17% for 2-year return period rainfall events and 27% for 5-year rainfall events by 2050. Underground stormwater drainage systems provided by the project were designed to accommodate 2-year rainfall-runoff in 2050 under a worst-case climate change scenario with the provision of over-land flow paths to safely convey 5-year rainfall-runoff under the same scenario. Upgraded road pavements were designed to account for climate change impacts with the installation of concrete pavements in areas prone to storm surge flooding, and in other areas, the use of polymer modified binders and geogrids for bitumen and asphalt road pavement to increase wearing coarse strength and durability.

4. The first outcome, the urban road infrastructure is climate proofed, was delivered through both the ADB administered CPRRP and the PVUDP. The remaining outcomes were delivered through PVUDP. The project is one of five that formed the *Climate Proofing Development in the Pacific* (CPDP) parent program (the program).⁴

¹ LDCF funds were used to increase urban drainage design capacity by 20% for short term rainfall.

² ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Loans, Grants, and Administration of Grant to the Republic of Vanuatu for the Cyclone Pam Road Reconstruction Project*. Manila.

³ ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loans, Grants, and Administration of Grant to the Republic of Vanuatu for the Port Vila Urban Development Project*. Manila.

⁴ The other four projects were: (i) Securing urban water supplies under climate change stress in Timor-Leste; (ii) Up-scaling climate-proofing in the transport sector in Timor-Leste: Sector wide approaches; (iii) Infrastructure Prioritization, Planning and Budgeting for Adaptation in Tuvalu, and (iv) Cross-cutting learning, improved information, training, and innovation.

5. ADB submitted a Program Framework Document (PFD) for Climate Proofing Development in the Pacific Program to GEF on 10 July 2012. GEF cleared the PFD on 28 March 2014 with four “child” projects in Timor-Leste, Tuvalu, and Vanuatu. On 25 July 2015, ADB submitted the child project “Protecting Urban Areas Against the Impacts of Climate Change in Vanuatu”. The GEF CEO endorsed the proposal for \$5,994,000 (inclusive of \$444,000 Agency Fee) from the GEF LDCF on 29 October 2015.

6. At approval, the CPRRP was estimated to cost \$18.5 million equivalent. In 2017 additional financing involving a \$4.1 million loan and \$4.1 million grant raised the total cost to \$27.9 million, 51% above the approved estimate. ADB provided two ADF loans totaling \$5.1 million, two ADF grants totaling \$11.1 million, and one loan (\$2.8 million) and one grant (\$2.8 million) from the Disaster Response Facility. GEF provided a grant of \$2.7 million to ensure that building back better-improved climate change resilience. The government’s counterpart financing of \$3.4 million was mainly in kind. The cost of associated services and recurrent cost items accounted for the balance. At completion, the actual CPRRP cost was **\$27.5** million.

7. At approval, the PVUDP cost was estimated at \$39.0 million equivalent, ADB provided a loan of SDR 3.174 million, the Government of Australia provided two grants of \$31 million equivalent. Depreciation of the Australian dollar resulted in a forex loss of \$5.8 million equivalent at project close. GEF provided a grant of \$2.87 million to protect urban areas against the impacts of climate change. The government’s intended counterpart financing of \$3.1 million was not forthcoming. At completion, the actual PVUDP cost was **\$34.9** million.

8. The ADB baseline investment project contributed to the rehabilitation of the 116.2 km Efate ring road, and improved roads, sanitation, and hygiene in Greater Port Vila (GPV), and improved capacity by government agencies, community, and user organizations to manage sanitation, roads, and drainage systems effectively and efficiently. GEF funding under CPRRP met a portion of the civil works contract costs. GEF funding under the PVUDP focused on drainage system works and facilitated nature-based, and innovative approaches to reduce the flooding risk in Port Vila.

9. The project is consistent with GEF Focal Area Strategy Framework CCA-1 Vulnerability of physical assets and natural systems reduced; CCA-2 Increased awareness of climate change impacts, vulnerability, and adaptation; and CCA-3 Access to improved climate information and early warning systems enhanced at regional, national, sub-national and local levels.

B. Terms of Reference for Project Completion Review

10. As the GEF grant was integral to the baseline project, the terminal evaluation report (TER) was prepared in parallel with the preparation of the ADB PCRs for CPRRP and PVUDP. By virtue of the CPRRP being completed after PVUDP, the TER for the project is appended to this CPRRP PCR.⁵ The evaluation followed the same methodology applied for the PCR, which included field investigation and desk review on the executing agency’s project completion report and project performance monitoring reports (PPMS) concerning the project performance targets and indicators in the design and monitoring framework. The actual project costs and financing plan were compared with those at approval. For the PVUDP PCR, ADB fielded a mission in January 2019 and had meetings and interviews with local stakeholders and project implementing agencies. A formal PCR mission was not fielded for the CPRRP due to COVID-19 travel restrictions. This did not compromise the quality of the PCR analysis as ADB resources resident

⁵ Refer to the PVUDP PCR at: <https://www.adb.org/projects/documents/van-42391-013-pcr>.

in-country completed all necessary due diligence and stakeholder consultations. The GEF focal point (i.e., Ministry of Climate Change) was engaged through regular reporting/consultation and commenting on the draft final PCR reports.

C. Implementation

11. The CPRRP implementation arrangements were appropriate. The TC Pam National Recovery and Economic Strengthening Program required externally funded projects to be implemented by line ministries. The Public Works Department (PWD) of the MIPU was the implementing agency (IA). A project management unit (PMU) comprising PWD staff, and the DSC was established in MIPU to design, administer and implement the project. The Ministry of Finance and Economic Management (MFEM) was the executing agency (EA). Responsibility for project preparation was assigned to an infrastructure working group (IWG) created within MIPU. The IWG consisted of the Director General of MIPU, the Director of PWD, Operations Manager, Provincial Managers, PWD Engineers. ADB participated as an observer to the IWG. The DSC was integrated into MIPU's engineering unit and reported directly to the IWG. The PMU was responsible for all implementation activities, including feasibility studies, detailed design, the preparation of cost estimates, the administration of procurement, contract management and supervision, project communications, safeguards implementation, and monitoring and evaluation. The DSC was an international firm and acted as a lead consultant with support from individual international and national experts.

12. The PVUDP implementation arrangements were appropriate. The implementing agencies were the MIPU and the Department of Environmental Protection and Conservation (DEPC). The Vanuatu PMU, which reports to the Office of the Prime Minister, managed the project on behalf of the implementing agencies. Due to its mandate as a regulator, DEPC's role included providing guidance, advice, and monitoring of environmental issues rather than implementation. The MFEM was the executing agency. The arrangements were functional during the implementation period. The PMU adequately staffed project management and was supported by the DSCD for more than five years. Eleven individual consultants were recruited through the project to provide support to the PMU. Starting from 2013, the PMU began managing other infrastructure projects financed by ADB and other donors. As a result, PMU's capacity was stretched, and it subsequently became less focused on the project. Review missions discussed this issue, and ADB requested the government to recruit additional staff. Due to budget constraints, the issue remained largely unresolved through to project completion. ADB provided ad hoc support through technical assistance financing intermittent inputs, such as an international environment specialist to assist the two in-house safeguards officers. To obtain high-profile attention and strengthen project coordination countrywide, the PMU was placed under the Office of the Prime Minister rather than under either IA. Because of the complicated reporting lines and a lack of capacity, MIPU did not review designs and manage contracts as envisioned. ADB recruited individual consultants to support MIPU to enhance project design review, quality control, and contract oversight to ensure construction quality.

13. The GEF focal point was engaged through regular reporting/consultation and provided timely and effective support during implementation, in particular with regard to scope changes and extension of the grant closing date.

D. Relevance, Effectiveness, and Impact

14. As this GEF project involves a combination of ratings from both CPRRP and PVUDP, weightings for each project are based upon each project's relative final cost.⁶

15. **Relevance.** The project is rated *relevant*.

16. The CPRRP is rated *highly relevant*. On the government's request, the emergency assistance loan funded an obvious need resulting from a disaster event. The project was transformational as it restored destroyed infrastructure and livelihoods restoring connectivity. The project aligned closely with the NRESP, particularly the goal of reconstructing damaged infrastructure and strengthening its resilience to future disasters and climate change. The design included design features that mitigate the impact of future disasters. The design of the project balanced the need for long-term capacity development with the need for providing expeditious post-disaster relief.

17. The PVUDP is rated *relevant*. At appraisal and at completion, the project's outcomes were aligned with the country's development priorities, ADB's country strategy, and cofinanciers' country priorities. The original project design was based on several underestimates which, together with the depreciation of the Australian dollar, led to a shortfall of funds. The project scope was adjusted to reflect priority needs within the available budget. After the major change of scope, the project remained relevant by addressing Port Vila's most urgent basic urban needs of roads, sanitation, and communal sanitation facility (CSF) services. The project modality was suitable, and the relevance of the project was strengthened by complementary physical works and capacity development delivered by other development partners.⁷

18. **Effectiveness.** The project is rated *less than effective*.

19. The CPRRP is rated effective. The project achieved the one output: reconstruction of transport infrastructure in damaged locations on Efate ring road and climate- and disaster-proofed. The project delivered the intended outcome to provide improved and reliable road connectivity in the project area and with increased resilience to climate change. Safeguards were implemented successfully.

20. The PVUDP is rated *less than effective as it achieved* three of the four outcome indicators. The indicator related to O&M budget allocations was not achieved. Output indicators were mainly achieved. The physical infrastructure outputs (outputs 1–3) were substantially achieved. Government staff training was conducted by a separate AusAID project instead of the project (outputs 4a–4b). Sanitation standards were fully complied with (output 4c). The training of women in CSF management (output 4d) was conducted as scheduled and achieved, with 54% women participants. The project was implemented with a reduced scope and smaller budget than initially envisaged due to foreign exchange losses and inadequate cost estimates (output 5). GAP implementation was rated *unsuccessful*. Safeguards were implemented successfully.

21. **Impact.** The project impact is rated satisfactory.

⁶ CPRRP cost \$27.5 million, PVUDP cost \$34.9 million. Together the project cost \$62.4 million.

⁷ Complementary development partner projects include the DFAT Roads for Development Project and the Government of New Zealand-funded Vanuatu Tourism Infrastructure Project. Project Completion Report. December 2017. Prepared for the Ministry of Infrastructure and Public Utilities, Government of Vanuatu

22. The CPRRP impact is rated *satisfactory*. CPRRP delivered its intended impact, which was *accelerated economic and social recovery in Vanuatu's TCP-affected provinces*, namely Efate. Tourism sector businesses re-opened in response to restored connectivity.⁸ The project roads and bridges have fully restored access to education, social and economic services. This translates to restoration and enhancement of employment opportunities, household incomes, well-being and living standards. The provision of improved quality structures with enhanced road safety features and increased climate-resilience is especially valued by road users, most notably those most vulnerable to injury, including non-motorized transport users and pedestrians. The impact on communities is positive. The community liaison committees gave communities a voice during the project option analysis and multi-criteria analysis deliberations, and their views and needs were captured in improvements to subproject designs. Close consultation on the implementation of safeguards continued through implementation. These consultations secured public support, which facilitated timely approvals. Awareness-raising consultations resulted in a better understanding of flood behavior and the importance of preparation for extreme weather events. At the same time, the awareness and prevention training of communicable diseases increased knowledge around personal protection and hygiene. Of the participants in the project completion survey, 48% were women, who widely expressed views on the need for the safe use and maintenance of project facilities.

23. The PVUDP is rated *satisfactory* as it substantially achieved the targeted development impact. The DMF impact was sustainable development of Port Vila. With the collaborative efforts of ADB and co-financiers—the Government of Australia and the GEF—the project provided essential urban services and facilities, including upgrading roads to improve transportation, constructing and rehabilitating drainage systems to reduce flooding risk, establishing the fecal sludge treatment plant to collect and treat all fecal sludge, and constructing new and upgrading existing community sanitary facilities to improve community sanitation services and health. PVUDP led to clear positive economic, environmental, social, and poverty reduction impacts. While the project delivered the capacity development outputs, this did not achieve a level of institutional impact that could make the project more sustainable.

E. Global Environmental Benefit and Catalytic Roles

24. The project was not linked to the defined GEF Global Environmental Benefits.

25. The Adaptation Monitoring and Assessment Tool (AMAT) monitoring tool identified two target outcomes involving the number of direct beneficiaries and kilometers of roads strengthened. The entire island population will benefit from the project interventions. Compared to the target 50,000 beneficiaries, the 2020 census identified an Efate island population of 89,802 people (49.83% female), of whom 78,101 were resident in Greater Port Vila.⁹ That includes the urban areas of Erakor, Eratap, Mele and Pango. Compared to the target of 30 km of roads strengthened, the project strengthened a total of 29.6km.¹⁰

26. The project objective was to reduce vulnerability and increase resilience to climate change hazards in urban areas and the transport sector in Vanuatu. The project interventions were

⁸ The post disaster assessment report reported that tourism generated GDP as a percentage of overall GDP was 26% in 2002 and 33% in 2010. This increased to 48% in 2018. Source <https://knoema.com/atlas/Vanuatu>

⁹ <https://vnso.gov.vu/index.php/en/census-and-surveys/census/census-2020>.

¹⁰ PVUDP improved 12.1 kilometres of urban roads. CPRRP improved the 6km Tassiriki urban road, the 10.1 km 2nd lagoon to Rentapau road, and 1.3km of pavements as part of the Onesua storm surge repairs. Note the combined linear drainage structure lengths (culverts and bridges) are not included in this 29.6 km figure.

consistent with the GEF Focal Area Strategy Framework CCA-1 Vulnerability of physical assets and natural systems reduced, CCA-2 Increased awareness of climate change impacts, vulnerability and adaptation, and CCA-3 Access to improved climate information and early warning systems enhanced at regional, national, sub-national and local levels.

27. The catalytic role of the project was to complement existing development partner efforts to enable adaptation through improved decision making and knowledge management. The GEF funds helped create innovative and cost-effective approaches to drainage including increased nature-based stormwater disposal (i.e. infiltration basins) which have proved highly effective.¹¹ The project targeted development of: (i) Climate Resilient Urban Road Standards; (ii) Greater Port Vila Resilient Urban Development Strategy and Action Plan; (iii) trained and capable personnel in Asset Operators and private sector consulting companies, and (iv) Climate resilient building codes and related regulatory support.

28. The goal to achieve climate resilient urban road standards was not achieved. The Australian government funded “Roads for Development” program was an associated initiative in the baseline project. Phase 1 costing A\$16.9 million, commenced in 2009 and was complete in 2012. It focused on the maintenance and rehabilitation of priority roads on the islands of Ambae, Malekula and Tanna, and institutional reform within the Public Works Department of MIPU. Phase 2 was conceived with an initial cost estimate of AU\$37 million and a 4-year implementation period. In 2019 the program prepared the *Vanuatu Public Roads Strategy* that identifies a roads investment strategy through to 2030. The Strategy recommends the use of fibre reinforced concrete pavements – recognizing an inability to maintain bitumen treated pavements to achieve their full economic life. The Strategy awaits the approval of the Council of Ministers.

29. The Greater Port Vila Resilient Urban Development Strategy and Action Plan (GPV RUDSAP) will guide investment in GPV from 2019 to 2030 and ensure that all future investments are aligned with a strategic vision for GPV focusing on urban resilience, and establishing Port Vila as an attractive, safe, liveable, and green city to serve as a vibrant national economic hub. The GPV RUDSAP is aligned with the National Sustainable Development Plan 2016–2030 (Vanuatu 2030: The People’s Plan), and the Vanuatu Climate Change and Disaster Risk Reduction Policy 2016–2030. For GPV RUDSAP focus is largely on GPV’s vulnerability and presents be planning strategies for limiting new construction and development in high-risk areas, protective mitigation, and early warning systems including disaster preparedness and response.

30. The long-term human resource development objectives were partially achieved and continue with projects being prepared and administered by multilateral and bilateral development partners. The VPMU remains an influential and important project implementation agency – the ongoing operation of the VPMU is recognized by government and development partners alike as an important project legacy. ADB’s continuing urban sector engagements will continue a focus on developing implementation capacity.¹² Despite expectations, no Asset Operators have entered the market to service roads and drainage maintenance contracts – this being the result of the government preference to rely on the PWD for infrastructure maintenance. Small roadside

¹¹ The infiltration basins are located at: (i) Manples adjacent to the Kumul Highway, the National Convention Center; (iii) Stade adjacent to the netball courts; and (iv) Seven Stars (funded by the government). Prior to the project flooding frequently resulted in Anabrou to Seven Star Road being cut off for days following a modest (say 1 in 1 year) rainfall event.

¹² In 2020, ADB approved the *Greater Port Vila Urban Resilience Project* with an additional financing application to be presented to GEF in late 2021. The *Luganville Urban Water Supply and Sanitation Project* scheduled for approval in 2022 will also provide ADB an opportunity to further capacity development support that will reach for important institution building outcomes.

maintenance contracts with local communities have become an important maintenance tool for the Efate ring road and other rural roads.

Project Objective: To reduce vulnerability and increase resilience to climate change hazards in urban areas in Vanuatu			
Project Components/ Programs	Project Outcomes	Project Outputs	Completion status of expected outputs
Component 1: Strengthening the climate resilience of infrastructure	PVUDP / 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 flash-flooding.	<p>The project rehabilitated 12.1 km of roads with road drainage. The underachievement resulted from the detailed design optimization and higher unit cost of higher quality roads requested by the Government of Vanuatu (asphalt in lieu of double seal bituminous treatment). The rehabilitation provided climate resilient pavements including: (i) 6.5 km of asphaltic concrete for the Lini and Kumul Highways, which have high traffic volumes and heavy vehicular loads; (ii) 5.2 km of double seal bituminous treatment to roads in the central business district and other collector roads within the Port Vila municipal boundary; and (iii) 0.4 km of concrete pavement for George Kalsakau Drive in the central business district to provide increased durability against storm surge events that can accompany severe cyclones.</p> <p>The project constructed or rehabilitated 6.4 km of drainage comprising (i) 4.9 km of new pipe drainage, (ii) 0.3 km of grass-lined open drains, and (iii) rehabilitation of 1.2 km of existing pipe drainage. The project also constructed an additional 15.4 km of roadside drainage (curbs and gutters).</p>
Component 1: Strengthening the climate resilience of infrastructure	CPRRP / 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.	Refer to the DMF included as Appendix 1 of the CPRRP Project Completion Report for a full description of the implementation of the project outputs
Component 1: Strengthening the climate resilience of infrastructure	PVUDP / 1.3: Climate resilient, sustainable urban drainage implemented at urban sub-catchments	1.3.1: Two priority sub-catchments selected;	The project took an innovative design approach in 7 sub-catchments, including adopting nature-based stormwater disposal methods (infiltration basins),

		<p>1.3.2: Two sub-catchment level action plans;</p> <p>1.3.3: Priority measures to ensure the urban communities can cope with floods are implemented;</p> <p>1.3.4: Priority off the right-of-way measures to reduce floods are implemented with the participation of the urban communities;</p> <p>1.3.5: Knowledge management.</p>	<p>which reduced the required drainage pipe length to 6.4 km.</p> <p>The project prepared drainage plans and implemented improved drainage systems in six priority flood-prone urban areas in GPV. No flooding in the six flood-prone areas has been reported since PVUDP completion.</p> <p>The nature-based solution for stormwater disposal has been nature-based solution subsequently adopted elsewhere in GPV (Seven Stars and Korman) which has effectively reduced the frequency and severity of flooding.</p> <p>Onsite stormwater disposal is being adopted by a number of communities within Port Vila (e.g., Tokyo Buninga and Seaside Futuna).</p> <p>The nature-based solution design for onsite stormwater disposal, involving natural sink holes (beside the roadway) that transferred flood water to natural underground storage, were adopted by the government (MIPU) and design consultants following the development of the Manples, Stade, and Convention Center infiltration basins.</p> <p>No formal knowledge products were published. The project did serve as a strong demonstration – as design approaches have been and will likely continue to be replicated by others.</p>
Component 2: Enabling adaptation through improved	PVUDP / 2.1: Technical assistance provided, and capacity developed	2.1.1: Climate Resilient Urban Road Standards/Guidelines;	This output was not delivered.

<p>decision-making and knowledge development</p>		<p>2.1.2: Port Vila Disaster Risk Management Plan;</p> <p>2.1.3: A cadre of trained and capable personnel in the potential Asset Operators;</p> <p>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;</p> <p>2.1.5: Climate resilient building codes and related regulatory support.</p>	<p>The Greater Port Vila Resilient Urban Development Strategy will guide planning and infrastructure investment in GPV. The strategy provides clear practical measures to reduce disaster risk.</p> <p>No private asset operators have entered the market due to an absence of commercial opportunity. PWD retains operations and maintenance responsibility. Training of PWD asset operators is being provided through the Roads for Development programs.</p> <p>Consulting assignments are infrequent and are the subject of significant competition. Consequently, expertise frequently mobilizes and demobilize on assignment completion. Consulting companies have not been provided with a significantly large project workload to enable a verifiable assessment of this outcome.</p> <p>This output was not delivered. The Pacific Region Infrastructure Facility are advancing this important work. Refer paragraph 27 for detail.</p>
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31. The goal to document climate-resilient building codes and related regulatory support was not achieved. Work on these deliverables is ongoing with support being provided by the Pacific Region Infrastructure Facility.⁵³

F. Global Environment Facility Management Effectiveness and Threats Tracking Tools

32. The LDCF Adaptation Monitoring and Assessment Tool (AMAT) Indicators in Table 1 below was adopted as the Results Framework for the GEF/LDCF supported interventions.

G. Sustainability

33. The project is rated *less than likely sustainable*.

34. The CPRRP project is rated *likely sustainable* as the project outputs are likely to be maintained throughout their economic life. The project outputs involve predominantly concrete and steel structures that require minimal maintenance over their economic life. Less confidence exists on the provision of timely maintenance for the rehabilitated road sections that represent 7.4% of CPRRP costs. All project outputs were well designed and constructed to a high-quality finish. The project BBB features have enhanced resilience and will notionally serve to reduce the long-term O&M funding burden.

35. The PVUDP project is rated *less than likely sustainable*. The government inadequately budgets O&M costs for roads, drainage, and septage operations, along with all other assets. Notably, the Port Vila communities that received the 18 CSF are mostly operating the facilities well, including raising revenue to pay for the day-to-day operation. This CSF component will be likely sustainable.

36. O&M budget allocations fell short of both CPRRP & PVUDP grant covenanted requirements in 2020. Sustainability requires needs based annual O&M budget allocations to service a to be defined (and agreed) prioritized maintenance regime. Political will is required for each of these pre-requisite conditions to exist. Both conditions must be in place for credible infrastructure performance standards to be defined, upon which the performance of qualified leadership and management can be measured. In parallel with the political commitment needed to adequately fund maintenance, the continuation of bilateral support for the Roads for Development program is vitally important to condition PWD staff to realize the full benefits of the asset management systems that have been established and are now operational.

37. It is important to recognize the beneficial environmental and social impacts achieved through the stormwater and road drainage improvements, and innovative stormwater disposal solutions, and the demonstration and replication value of the project design approach.

⁵³ Refer to link containing related work underway at: [Building Codes Guidance - Vanuatu Case Study | Pacific Regional Infrastructure Facility \(PRIF\) \(theprif.org\)](https://theprif.org/).

H. Monitoring and Evaluation Framework and Institutional Arrangement

38. A project performance monitoring system (PPMS) was established at project start to monitor achievement of project output and outcome indicators. The PPMS utilized the relevant ADB design and monitoring framework performance measures as revised from time to time. The implementing agencies documented progress in the ADB Quarterly Progress Reports and the annual GEF Project Implementation Reports. Project review missions were conducted as needed (or annually) for project supervision, and the midterm review and the project completion report mission (for PVUDP) evaluated project performance and achievements.

I. Rating

39. The project is rated moderately successful based on GEF six-point rating scale combining the rating of following three criteria: (i) the project was **relevant** to government and GEF priorities; (ii) the project was rated **effective** as the solutions provided by both CPRRP and PVUDP have been demonstrated under operations to be particularly effective, and are acknowledged to be of high demonstration value; (iii) the project was **efficient** considering the high benefit-cost ratio of emergency response activities, and drainage and pavement improvement works in urban areas. A successful rating could not be supported given: (i) the \$5.8 million equivalent foreign exchange loss that forced a reduction in the PVUDP scope, and; (ii) the lack of political will to meet the covenanted operations and maintenance funding requirements. Despite this the project achieved high quality value for money physical outputs that are considered most favorably by the population of Efate.

40. Detailed rating for each ADB and GEF evaluation criterion is listed below, and the ADB ratings extracted from the main text of the ADB PCRs.

CRITERIA	ADB rating CPRRP	ADB rating PVUDP	GEF rating CPDP: Protecting Urban Areas against the Impacts of Climate Change in Vanuatu
Relevance	Highly relevant	Relevant	Relevant
Effectiveness	Effective	Less than effective	Less than effective
Efficiency	Efficient	Efficient	Efficient
Sustainability	Likely sustainable	Less than likely sustainable	Less than likely sustainable
Overall Assessment	Successful	Less than successful	Moderately successful

ANNEX 1

A. Project Identification**GEF Project ID:** 9197**GEF Agency Project ID:** 42391-013**Countries:** Vanuatu**Project Title:** CPDP: Protecting Urban Areas against the Impacts of Climate Change in Vanuatu**GEF Agency:** Asian Development Bank**Total Disbursed Amount:** \$ 5,396,000**B. Dates**

Milestone	Expected Date	Actual Date
CEO endorsement		29 October 2015
Agency approval date		25 November 2015
Implementation start	22 September 2015	03 March 2016
Midterm evaluation		27 July 2017
Project completion	30 December 2017	25 November 2019
Terminal evaluation completion		July 2021
Final Disbursement Date		
Cyclone Pam Road Reconstruction Project		18 May 2020
Port Vila Urban Development Project		
Project closing	30 June 2018	03 July 2020

Source: Asian Development Bank.

C. Project Framework

Project Component / Outcome	Activity type ^a (TA or INV)	GEF financing (\$ million)		Cofinancing (\$ million)	
		Approved	Actual	Promised	Actual
Component 1: PVUDP Strengthening the climate resilience of infrastructure / 1.1 <i>The urban road infrastructure is climate proofed</i>	INV	1,370,000	1,620,000	13,000,000	10,360,000 ^b
Component 1: CPRRP Strengthening the climate resilience of infrastructure / 1.2 <i>Climate resilience integrated into post-cyclone PAM recovery efforts</i>	INV	2,680,000 ^c	2,530,000	15,820,000	24,980,000
Component 1: PVUDP Strengthening the climate resilience of	TA	1,000,000	1,200,000	4,500,000	4,485,000

infrastructure / 1.3 <i>Climate resilient, sustainable urban drainage implemented at urban sub- catchments</i>					
Component 2: PVUDP Enabling adaption through improved decision-making and knowledge development / 2.1 <i>Technical assistance provided and capacity developed.</i>	TA	500,000	250,000	2,000,000	1,430,000
Subtotal			5,550,000		46,730,000
Project Management Cost ⁵⁴ (PMC)			100,000		600,000

Notes

^a The design of the ring road (CPRRP) was not available at the time of CEO endorsement, and so a thorough additionality analysis was not possible. In line with LDCF co-financing guidelines, a ratio of 1:3 was used to determine the LDCF contribution to this output. Relevantly note the CPRRP Feasibility Study prepared during implementation determined the incremental cost of adaptation at \$695,000.

^b Activity type can be either investment or technical assistance.

^c Note that the GEF Endorsement document states \$32,000,000. However, the project design (PAM as approved) allocated \$13.0 million for roadworks.

Sources: GEF estimates and Asian Development Bank estimates.

D. Cofinancing

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)	Materialized Cofinancing at Closure (\$)
Recipient Country	Government of Vanuatu	In-kind	3,100,000	0
GEF Agency	ADB (ADF)	Loan	5,000,000	3,174,000
GEF Agency	ADB (ADF)	Loan	1,000,000	924,000
	ADB (DRF)	Loan	2,810,000	2,551,000
GEF Agency	ADB (DRF)	Grant	2,810,000	2,692,000
Donor Agency	Government of Australia	Grant	26,500,000	20,176,000
Donor Agency	Government of Australia CFA	Grant	4,500,000	4,415,000
GEF Agency	ADB	Grant	0	6,904,000
GEF Agency	ADB	Loan	0	3,450,000
GEF Agency	ADB	Loan	0	4,425,000
Total Cofinancing			47,330,000	48,711,000

ADB = Asian Development Bank; ADF = Asian Development Fund; GEF = Global Environmental Fund; CFA = Channel Financing Grant ; DRF = Disaster Response Facility

⁵⁴ 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.

ANNEX 2 PROJECT FRAMEWORK OF GEF CEO-ENDORSEMENT DOCUMENT

Project Objective (impact): To reduce vulnerability and increase resilience to climate change hazards in urban areas in Vanuatu

1. Cyclone Pam Road Reconstruction Project: Outlined in Appendix 1 of the PCR

2. Port Vila Urban Development Project

Design Summary	Performance Indicators and Targets	Project Achievements
Impact Sustainable development of Port Vila achieved.		<p>The project has upgraded and provided climate resilient roads, improved stormwater drainage and reduced flooding, improved fecal sludge treatment and disposal provided sanitation facilities to informal communities as well public sanitation facilities, delivered hygiene awareness and training to more than 10,000 people, and built operations and maintenance capacity for urban roads, drainage, and sanitation facilities.</p> <p>All these help the sustainable development in Port Vila.</p>
Outcome Safer and less congested roads, reduced flooding and improved health and hygiene in Port Vila reduced	<p>By 2019: The government maintains its initial budget commitment of \$400,000 per annum for maintenance works.</p> <p>75% of households within the urban and peri urban areas in Port Vila have access to improved sanitation.</p> <p>Incidence of diarrhea in Port Vila reduced by half from 892 reported cases per 1,000 population in 2010.</p> <p>At least 20% decrease in travel time (2010 baseline is 2 minutes per km), and 0.5% decrease in vehicle operations costs.</p>	<p>By 2019 <u>Not Achieved</u> The government provided Vt65,027,892 (\$570,000 equivalent) in its 2019 National budget for development and maintenance of urban roads in Shefa Province, but data of the actual expenditure on roads O&M was unavailable.</p> <p><u>Achieved</u> The WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) estimated that by end of 2016, 92% of Vanuatu's urban population had access to improved sanitation. In Port Vila, 10,270 households (94%) have access to improved sanitation.</p> <p><u>Achieved</u> According to Ministry of Health 2018 statistics data, the number of reported cases of mild, moderate, and acute diarrhea in Efate (including Port Vila) was 8,000 cases which was equivalent to 83 reported cases per 1,000 population.</p> <p><u>Not Achieved</u> It is not able to evaluate this indicator since no commuter and traffic surveys have been conducted since 2014. However, anecdotal evidence from Port Vila residents indicates that travel times through Port Vila have decreased due to the roads improved by the project (particularly the Lini Highway and the Kumul Highway), improved traffic controls at major road intersections. The project also constructed of bus bays and conducted intensive road safety</p>

Design Summary	Performance Indicators and Targets	Project Achievements
		<p>campaigns to regulate the operation of minivans. They now collect or off-load passengers in the bus bays instead of stopping in the middle of roads and disrupting the traffic flow. The project improved stormwater drainage and reduced traffic jams during the heavy rains, particularly on the Kumul Highway (the fastest route to Port Vila's airport and northern Efate) which was frequently impassable at Manples due to flooding.</p>
<p>Outputs</p> <p>1. Road and drainage network in Port Vila improved</p>	<p>By 2019:</p> <p>1a. 13.3 km of urban roads rehabilitated.</p>	<p>1a. Achieved 12.1 km of roads were rehabilitated by 8 November 2019. The road rehabilitation comprised provision of climate resilient pavements including:</p>
	<p>1b. 14.5 km of urban drainage constructed or rehabilitated.</p>	<p>(a) 6.5 km of asphaltic concrete for the Lini Highway and Kumul Highway which have high traffic volumes and heavy vehicular loads. The upgraded pavements were reinforced with asphalt reinforcing grid and polymer modified binder was applied for improved strength and durability and increased design life (15 years). (b) 5.2 km of double seal bituminous treatment to roads in the Central Business Area and other collector roads within the Port Vila municipal boundary. The bituminous treatments included the use of polymer modified binder for improved strength and durability and increased design life (10 years). (c) 0.4 km of concrete pavement for George Kalsakau Drive in the Central Business Area which is exposed to sea inundation during severe cyclones. In addition, 45 bus bays and 6.5 km of 2 m wide footpaths were constructed which significantly improved vehicular and pedestrian traffic flow on the Lini Highway and Kumul Highway.</p> <p>1b. Substantially achieved. Construction of the drainage component was completed in August 2018. A total of 6.4 km of drainage was constructed or rehabilitated comprising (i) 4.9 km of new pipe drainage, (ii) 0.3 km of grass-lined open drains, and (iii) 1.2 km of existing pipe drainage rehabilitated. An additional 15.4 km of roadside drainage (kerbs and gutters) was also constructed which was not included in the drainage targets at the major change of scope.</p> <p>In the major change of scope, it scheduled to improve drainage in 3 urban flooding areas by building 14.5 km drainage system. An effective and</p>

Design Summary	Performance Indicators and Targets	Project Achievements
		<p>innovative drainage design approach was taken, including the adoption of nature-based stormwater disposal methods (infiltration basins), which resulted in a reduction of the drainage length to 6.4 km as well as the cost. At the end of construction, the project improved the drainage systems in 6 urban flooding areas. The output was doubled with cost savings.</p>
<p>2. The government has improved the sanitation system in GPV.</p> <p>3. Central area and settlement communities use improved hygiene facilities.</p>	<p>2a. All (domestic & commercial) sludge in Port Vila is treated and disposed.</p> <p>3a. 4 new multipurpose community sanitation & hygiene facilities at 2 informal settlements in GPV constructed and operational with the majority operated by women's groups.</p>	<p>2a. Achieved A fecal sludge treatment facility with a capacity of 28 m³/day was constructed under the project was commissioned in August 2017. It was initially operated by the civil works contractor for 8 months to prove the plant functionality and to train Port Vila Municipal Council (PVMC) personnel in the operations and maintenance of the plant. During the first 6 months of operations, 1,160 cubic meters of fecal sludge was delivered to the facility, that is 6.4 cubic meters a day from commercial sources and households. PVMC took over the management of the facility in May 2018. All fecal sludge collected in Port Vila and its surrounds is now treated at the facility. Inspections of the facility in 2019 showed that the facility was operating satisfactorily and well maintained.</p> <p>3a. Achieved The project delivered 13 new communal sanitation facilities (CSF) to 6 informal settlements in Port Vila and have been handed over to the communities. 6 new CSFs built by contractors were completed in October 2017, serving the communities of Mele-Waisisi (3), Blacksands (1), Seaside Paama (1) and Seaside Futuna (1). 7 new CSFs were built by the communities with designs, materials, and technical expertise provided by the project. They were completed in 2018 serving Ohlen Nabanga (1) and Tokyo Buninga (6). Each CSF contains flush toilets, showers, and washing facilities. Separate toilet and shower facilities were provided for men and women. All facilities except for those at Tokyo Buninga provide facilities for handicapped persons. Community sanitation committees were established to manage the new facilities and composed mostly of women.</p>
	<p>3b. 4 existing multipurpose community sanitation & hygiene facilities at 3 informal settlements in GPV refurbished with the majority operated by women's groups.</p>	<p>3b. Achieved The project refurbished 5 exiting sanitation facilities at 4 informal communities - Seaside Palma (1), Seaside Futuna (1) Seaside Tongoa (1) and Tokyo Buninga (2). All refurbishments were completed in October 2017 except for the refurbishments at Tokyo Buninga which was completed in December</p>

Design Summary	Performance Indicators and Targets	Project Achievements
		2018. The refurbished facilities are managed by Community sanitation committees composed mostly of women.
4. Government agencies and communities and user groups have the capacity to manage sanitation, roads, and drainage systems effectively and efficiently.	3c. 3 new public toilet facilities with access for women, children & the disabled.in the GPV constructed and operational.	3c. Substantially achieved 2 new public sanitation facilities, including toilets and showers, were constructed (Fatumaru Bay and Independence Park). Construction of the facilities was completed in July 2018. The remaining toilet was not constructed due to lack of funds. The Fatumaru Bay facilities are managed and operated by PVMC and the Independence Park facilities by the Vanuatu Cricket Association. The latter's hours of operation are restricted.
	3d. 4 existing public toilet facilities in GPV refurbished, including special provisions for women, children & the disabled.	3d. Not achieved Two public toilet facilities, one at the Port Vila Hospital maternity wing and another one at Port Vila Hospital Eye and Anti-natal Clinic were refurbished and handed over to the Hospital for operation in July 2018. The remaining toilet facilities were not refurbished due to lack of funds.
	<p>4a. Capacities of at least 50 government staff (50% being women) improved to manage and maintain sanitation, roads, and drainage facilities.</p> <p>4b. Drainage maintenance follows 100% annual maintenance schedule.</p>	<p>4a. Not achieved Capacity development for road and drainage system maintenance within MIPU was covered by the road maintenance capacity building provided by the DFAT through the Roads for Development (R4D) Program instead of the project. The R4D road maintenance capacity development delivered training to more than 100 people Public Works Department (a division of MIPU) personnel in Vanuatu. A total of 32 workers, including 3 women in MIPU's Shefa Division, which is responsible for the maintenance of roads in Port Vila, have received training related to road and drainage maintenance.</p> <p>Capacity development for PVMC personnel for operations and maintenance of the fecal sludge treatment facility was delivered by facilities civil works contractor over a period of 8 months. Six persons were trained including 2 women. The people trained now operate the facility.</p> <p>4b. Not achieved At the time of preparation of the PCR, it is too early to conclude if drainage maintenance is absolutely following the annual drainage schedule. However, MIPU has established drainage maintenance schedules for Port Vila drainage network and is implementing the schedule.</p>

Design Summary	Performance Indicators and Targets	Project Achievements
		Further, MIPU has adopted the nature-based stormwater disposal approach that was developed under the project and has constructed a similar facility at Seven Stars (a residential area north of Port Vila's central business area). No flooding at Seven Stars has been reported since the facility was constructed.
5. Efficient project management services are provided.	<p>4c. 100% of community sanitation facilities comply with sanitation standards at any time.</p> <p>4d. 100 women are trained in management of sanitation and hygiene facilities maintenance activities.</p> <p>5a. The project is implemented on time and within budget.</p>	<p>4c. Substantially achieved At the time of preparation of the PCR, 16 out of 18 CSFs delivered by the project, except 2 at Blacksands and Seaside Futuna, were fully maintained and operating well. Problems within the Blacksands and Seaside Futuna communities in collecting facility usage fees have led to delays in payment of water bills which facilities being shut on a number of occasions for several weeks until the community was able to raise the funds required to pay the water bill.</p> <p>4d. Achieved Capacity development for the operations and maintenance of community sanitation facilities was delivered through the project's hygiene awareness and education program which delivered training 2,697 women, 3,124 girls, 1,674 men, and 3,201 boys.</p> <p>5a. Not achieved The project completion was extended twice, representing a total two year delay.</p> <p>Budget available for project reduced by approximately 20% due to foreign exchanges losses of the co-financing. A major change of scope was conducted.</p>

DISBURSEMENT OF ADB LOAN AND GRANT PROCEEDS

Table A6.1: Annual and Cumulative Disbursement of ADB Grant 0459 Proceeds
(\$ million)

Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.37	5.36%	0.37	5.36%
2017	2.98	43.19%	3.35	48.55%
2018	1.76	25.51%	5.11	74.06%
2019	1.70	24.64%	6.81	98.70%
2020	0.09	1.30%	6.90	100.00%
Total	6.90	100.00%		

ADB = Asian Development Bank.

Source: Asian Development Bank.

Figure A6.1: Projection and Cumulative Disbursement of ADB Grant 0459 Proceeds
(\$ million)

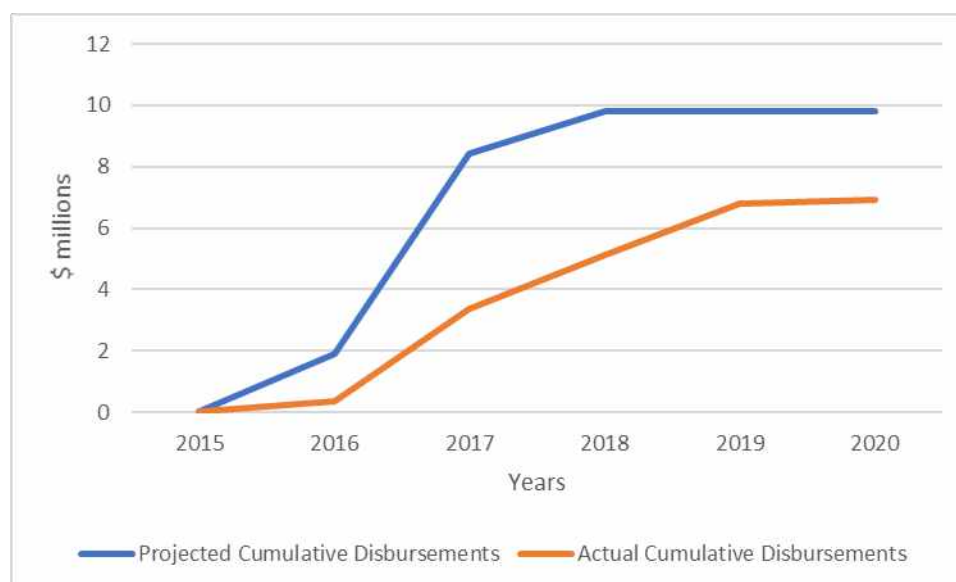
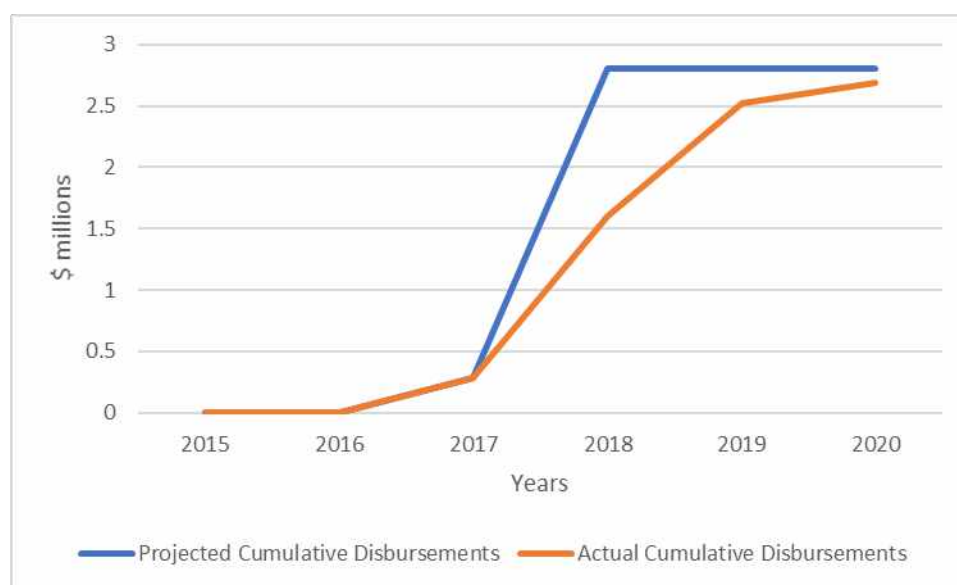


Table A6.2: Annual and Cumulative Disbursement of ADB Grant 0460 Proceeds
(\$ million)

Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	0.28	10.45%	0.28	10.41%
2018	1.32	49.25%	1.60	59.48%
2019	0.91	33.96%	2.52	93.68%
2020	0.17	6.34	2.69	100.00%
Total	2.68	100.00%		

Note: Numbers may not sum precisely because of rounding

Figure A6.2: Projection and Cumulative Disbursement of ADB Grant 0460 Proceeds
(\$ million)**Table A6.3: Annual and Cumulative Disbursement of GEF Grant 0461 Proceeds**
(\$ million)

Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	0.27	10.71%	0.27	10.67%
2018	1.26	50.00%	1.53	60.47%
2019	0.76	30.16%	2.30	90.90%
2020	0.23	9.13%	2.53	100%
Total	2.52	100.0%		

Note: Numbers may not sum precisely because of rounding

Figure A6.3: Projection and Cumulative Disbursement of GEF Grant 0461 Proceeds
(\$ million)

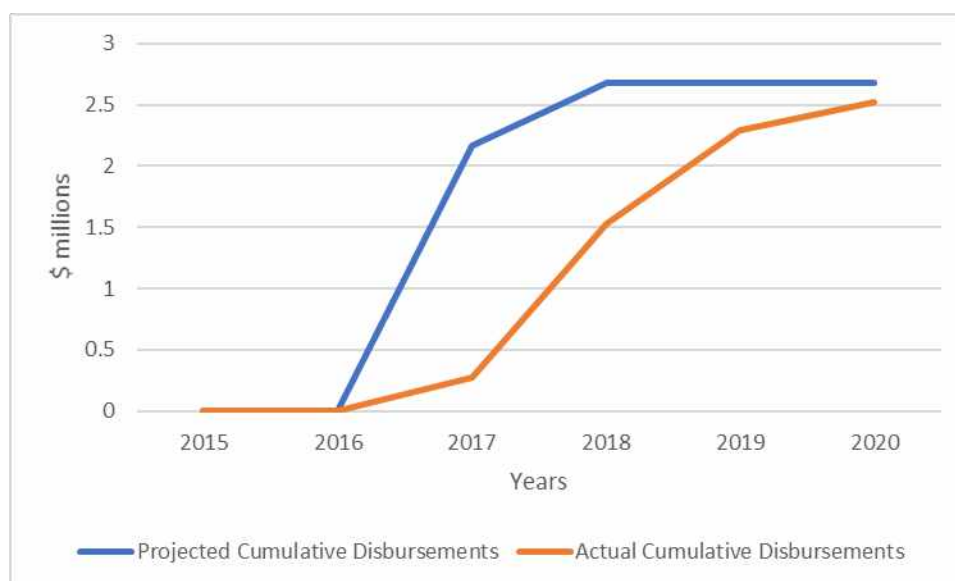


Table A6.4: Annual and Cumulative Disbursement of ADB Loan COL 3331 Proceeds
(\$ million)

Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	0.09	9.90%	0.09	9.90%
2018	0.44	48.35%	0.54	58.70%
2019	0.33	36.26%	0.87	94.57%
2020	0.05	5.49%	0.92	100.00%
Total	0.91	100.00%		

Note: Numbers may not sum precisely because of rounding

Figure A6.4: Projection and Cumulative Disbursement of ADB COL Loan 3331 Proceeds
(\$ million)

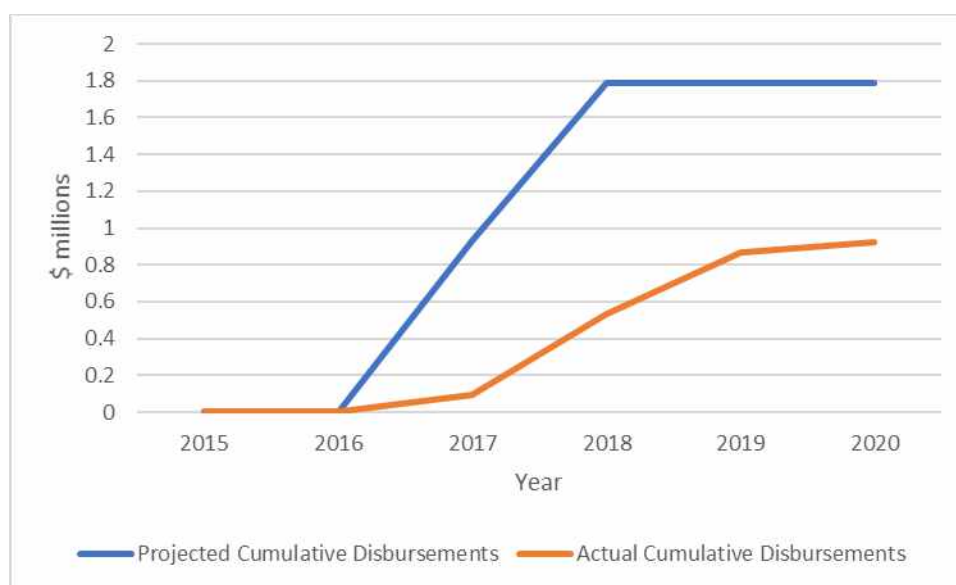


Table A6.5: Annual and Cumulative Disbursement of ADB Loan COL 3332 Proceeds
(\$ million)

Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	0.26	10.08%	0.26	10.08%
2018	1.24	48.06%	1.50	58.14%
2019	0.93	36.05%	2.43	94.19%
2020	0.15	5.81%	2.58	100.0%
Total	2.58	100.0%		

Note: Numbers may not sum precisely because of rounding

Figure A6.5: Projection and Cumulative Disbursement of ADB Loan COL 3332 Proceeds
(\$ million)

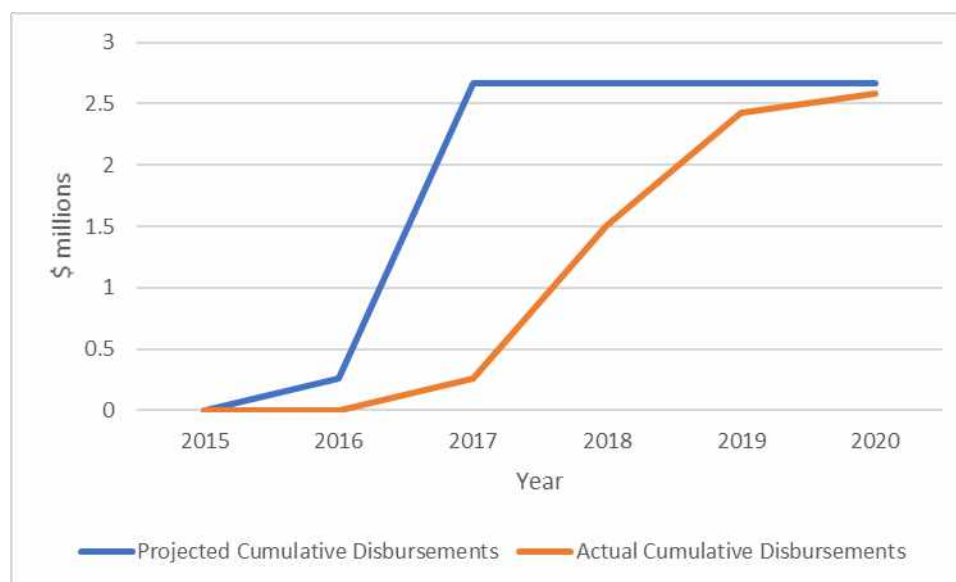


Table A6.6: Annual and Cumulative Disbursement of ADB Grant 0540 Proceeds
(\$ million)

Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2017	0.00	0.00	0.00	0.00
2018	2.83	69.53	2.83	69.53
2019	1.17	28.75	4.00	98.28
2020	0.07	1.72	4.07	100.0
Total	4.07	100.0		

Note: Numbers may not sum precisely because of rounding

Figure A6.6: Projection and Cumulative Disbursement of ADB Grant 0540 Proceeds
(\$ million)

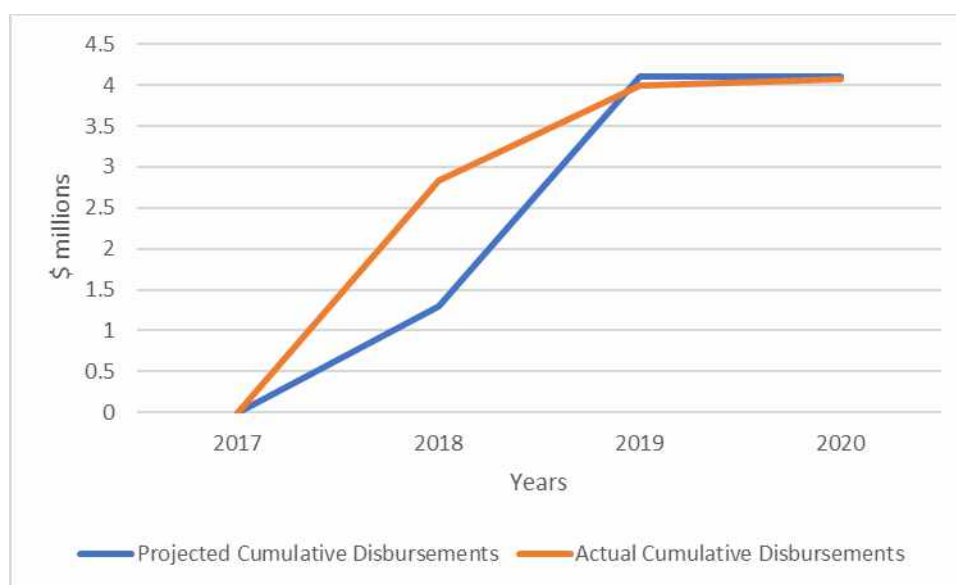
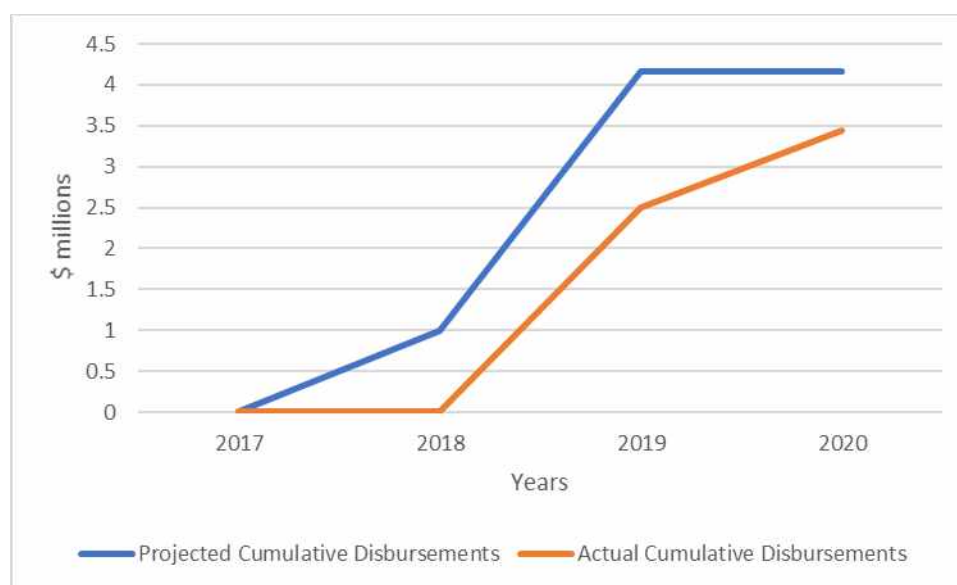


Table A6.7: Annual and Cumulative Disbursement of ADB Loan 3552 Proceeds
(\$ million)

Year	Annual Disbursement		Cumulative Disbursement	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2017	0.00	0.00%	0.00	0.00%
2018	0.00	0.00%	0.00	0.00%
2019	2.51	72.97%	2.51	72.97%
2020	0.93	27.03%	3.44	100.0%
Total	3.44	100.0%		

Note: Numbers may not sum precisely because of rounding

Figure A6.7: Projection and Cumulative Disbursement of ADB Loan 3552 Proceeds
(\$ million)



CONTRACT AWARDS OF ADB LOAN AND GRANT PROCEEDS

Table A7.1: Annual and Cumulative Contract Awards of ADB Grant 0459 Proceeds
(\$ million)

Year	Annual Contract Awards		Cumulative Contract Awards	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	4.09	58.43%	4.09	58.43%
2017	2.91	41.57%	7.00	100.0%
2018	0.00	0.00%	7.00	100.0%
2019	0.00	0.00%	7.00	100.0%
2020	0.00	0.00%	7.00	100.0%
Total	7.00	100.0%		

ADB = Asian Development Bank.

Source: Asian Development Bank.

Figure A7.1: Projection and Cumulative Contract Awards of ADB Grant 0459 Proceeds
(\$ million)



Table A7.2: Annual and Cumulative Contract Awards of ADB Grant 0460 Proceeds
(\$ million)

Year	Annual Contract Awards		Cumulative Contract Awards	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	2.57	95.54%	2.57	95.54%
2018	0.00	0.00%	2.57	95.54%
2019	0.23	8.55%	2.81	104.46%
2020	-0.11	-4.09%	2.69	100.0%
Total	2.69	100.0%		

ADB = Asian Development Bank.

Source: Asian Development Bank.

Figure A7.2: Projection and Cumulative Contract Awards of ADB Grant 0460 Proceeds
(\$ million)

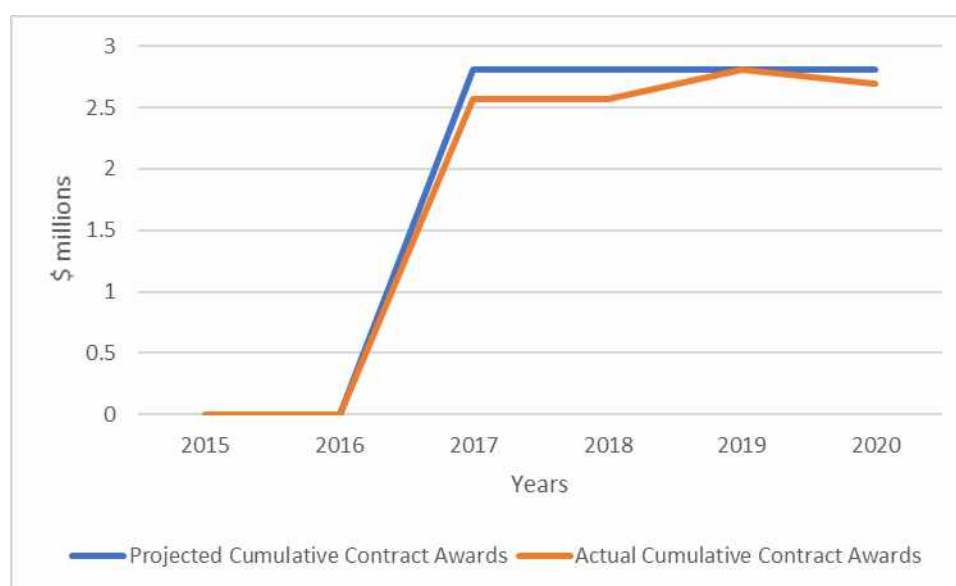


Table A7.3: Annual and Cumulative Contract Awards of GEF Grant 0461 Proceeds
(\$ million)

Year	Annual Contract Awards		Cumulative Contract Awards	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	2.50	98.81%	2.50	98.81%
2018	0.00	0.00%	2.50	98.81%
2019	0.03	1.19%	2.53	100.0%
2020	0.00	0.00%	2.53	100.0%
Total	2.53	100.0%		

ADB = Asian Development Bank.

Source: Asian Development Bank.

Figure A7.3: Projection and Cumulative Contract Awards of GEF Grant 0461 Proceeds
(\$ million)



Table A7.4: Annual and Cumulative Contract Awards of ADB Loan COL 3331 Proceeds
(\$ million)

Year	Annual Contract Awards		Cumulative Contract Awards	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	0.91	100.0%	0.91	100.0%
2018	0.00	0.00%	0.91	100.0%
2019	0.00	0.00%	0.91	100.0%
2020	0.00	0.00%	0.91	100.0%
Total	0.91	100.0%		

ADB = Asian Development Bank.

Source: Asian Development Bank.

Figure A7.4: Projection and Cumulative Contract Awards of ADB Loan COL 3331 Proceeds
(\$ million)

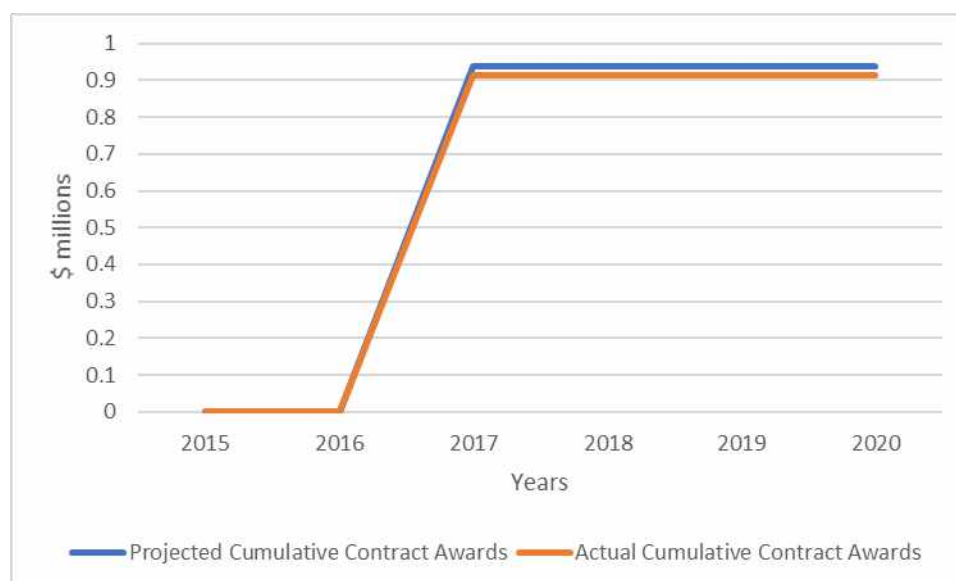


Table A7.5: Annual and Cumulative Contract Awards of ADB Loan COL 3332 Proceeds
(\$ million)

Year	Annual Contract Awards		Cumulative Contract Awards	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2015	0.00	0.00%	0.00	0.00%
2016	0.00	0.00%	0.00	0.00%
2017	2.55	100.0%	2.55	100.0%
2018	0.00	0.00%	2.55	100.0%
2019	0.00	0.00%	2.55	100.0%
2020	0.00	0.00%	2.55	100.0%
Total	2.55	100.0%		

ADB = Asian Development Bank.

Source: Asian Development Bank.

Figure A7.5: Projection and Cumulative Contract Awards of ADB Loan COL 3332 Proceeds
(\$ million)

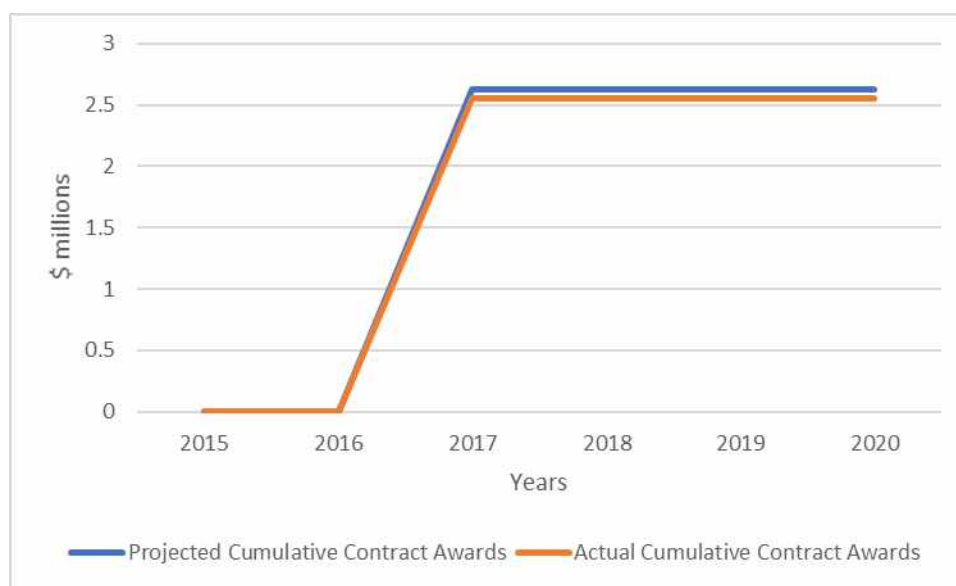


Table A7.6: Annual and Cumulative Contract Awards of ADB Grant 0540 Proceeds
(\$ million)

Year	Annual Contract Awards		Cumulative Contract Awards	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2017	0.00	0.00%	0.00	0.00%
2018	4.07	100.0%	4.07	100.0%
2019	0.00	0.00%	4.07	100.0%
2020	0.00	0.00%	4.07	100.0%
Total	4.07	100.0%		

ADB = Asian Development Bank.

Source: Asian Development Bank

Figure A7.6: Projection and Cumulative Contract Awards of ADB Grant 0540 Proceeds
(\$ million)

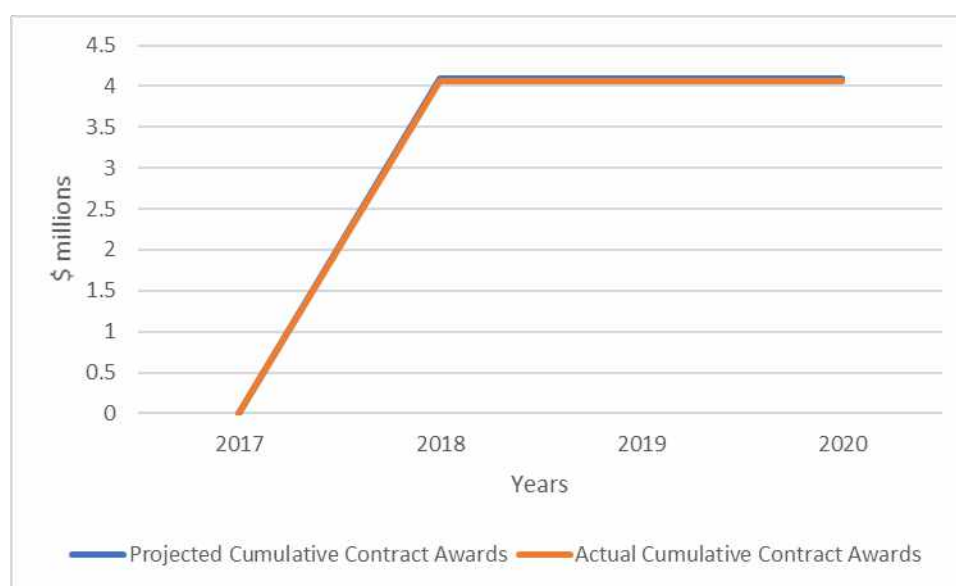


Table A7.7: Annual and Cumulative Contract Awards of ADB Loan COL 3552 Proceeds
(\$ million)

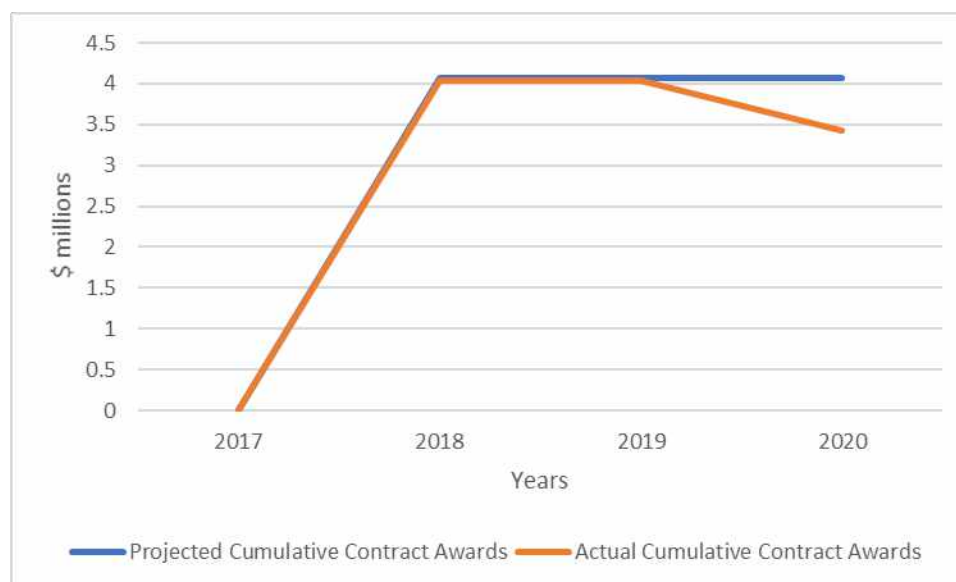
Year	Annual Contract Awards		Cumulative Contract Awards	
	Amount (\$ million)	% of Total	Amount (\$ million)	% of Total
2017	0.00	0.00%	0.00	0.00%
2018	4.04	117.78%	4.04	117.78%
2019	0.00	0.00%	4.04	117.78%
2020	-0.61 ^a	-17.78%	3.43	100.0%
Total	3.43	100.0%		

ADB = Asian Development Bank.

^a Negative figure due to a partial cancelation made that year.

Source: Asian Development Bank.

Figure A7.7: Projection and Cumulative Contract Awards of ADB Loan COL 3552 Proceeds
(\$ million)



CHRONOLOGY OF MAIN EVENTS

Date	Event
12–14 March 2015	Tropical Cyclone Pam makes landfall on the islands of Vanuatu
11 May 2015	Post Disaster Needs Assessment issue date
22 October 2015	Cyclone Pam Road reconstruction project approved by ADB Board
18 December 2015	Request for Proposal for DSC issued
27 June 2016	DSC contract signed
6 July 2016	DSC mobilized
27 October 2016	Draft Feasibility Study issued
29 November 2016	Final Feasibility Study issued
27 January 2017	Issue of Phase 1 civil works bid documents (due 19 March)
1–4 February 2017	Additional Financing fact finding mission
13 July 2017	Letter of acceptance Phase 1 civil works contract
2 August 2017	Issue of Phase 2 civil works bid documents (due 21 September)
9 August 2017	Phase 1 commencement date
9 August 2017	Additional Financing approved
1 November 2017	Dispute Board (Phase 1) appointed
16 November 2017	Letter of acceptance Phase 2 civil works contract
15 January 2018	Phase 2 commencement date
1 February 2018	Dispute Adjudicator (Phase 2) appointed
10 May 2019	Project time extension 1 (up to 31 October 2019) approved by ADB
31 October 2019	DSC demobilizes
31 October 2019	Final Quarterly Progress Report (June 30 to September 30, 2019) issued
4 November 2019	Project time extension 2 (up to 25 November 2019) approved by ADB
25 November 2019	Project completion date
16 January 2020	Client Project Completion Report issued
12 May 2020	Payment of retention monies (\$)
14 May 2020	Payment of retention monies (Vatu)
3 July 2020	Loan and grant accounts closed
25 November 2020	Close of Defects Liability Period

ADB = Asian Development Bank, DSC = design and supervision consultant.
Source: Asian Development Bank.

STATUS OF COMPLIANCE WITH LOAN COVENANTS

Covenant	Section Reference	Remarks / Issues
ARTICLE III. USE OF PROCEEDS OF THE LOANS AND THE GRANTS		
The Beneficiary shall cause the proceeds of the Loans and the Grants to be applied to the financing of expenditures on the Project in accordance with the provisions of this Financing Agreement.	3.01	Complied with
The proceeds of the Loans and the Grants shall be allocated and withdrawn in accordance with the provisions of Schedule 4 to this Financing Agreement, as such Schedule 4 may be amended from time to time by agreement between the Beneficiary and ADB.	3.02	Complied with
Except as ADB may otherwise agree, the Beneficiary shall procure, or cause to be procured, the items of expenditure to be financed out of the proceeds of the Loans and the Grants in accordance with the provisions of Schedule 5 to this Financing Agreement.	3.03	Complied with
The Loan Closing Date for the purposes of Section 8.02 of the Loan Regulations, and the Grant Closing Date for the purposes of Section 8.02 of the Grant Regulations, shall be 30 June 2018 or in each case, such other date as may from time to time be agreed between the Beneficiary and ADB.	3.04	Complied with. Extensions to the loan closing date were agreed.
ARTICLE IV. PARTICULAR COVENANTS		
In the carrying out of the Project and operation of the Project facilities, the Beneficiary shall perform, or cause to be performed, all obligations set forth in Schedule 6 to this Financing Agreement.	4.01	Complied with
<p>(a) The Beneficiary shall (i) maintain separate accounts and records of the Project, including separate accounts and records for the Loans and Grants; (ii) prepare annual financial statements for the Project in accordance with accounting principles acceptable to ADB; (iii) have such financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance to international standards for auditing or the national equivalent acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a report (which includes the auditors' opinion on the financial statements, use of the Loans proceeds and compliance with the financial covenants of this Financing Agreement) and a management letter (which sets out the deficiencies in the internal control of the Project that were identified in the course of the audit, if any; and (v) furnish to ADB, no later than 6 months after the end of each related fiscal year, copies of such audited financial statements, audit report and management letter, all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.</p> <p>(b) ADB shall disclose the annual audited financial statements for the Project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website.</p>	4.02	Being complied with – 2020 audit is yet to be submitted

(c) The Beneficiary shall enable ADB, upon ADB's request, to discuss the financial statements for the Project and the Beneficiary's financial affairs where they relate to the Project with the auditors appointed pursuant to subsection (a) (iii) hereinabove and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of the Beneficiary, unless the Beneficiary shall otherwise agree.		
The Beneficiary shall enable ADB's representatives to inspect the Project, the Goods and Works, and any relevant records and documents.	4.03	Complied with
ARTICLE VI. EFFECTIVENESS		
The following is specified as an additional condition to the effectiveness of this Financing Agreement for the purposes of Section 9.01(f) of the Loan Agreement shall have been duly executed and delivered, and all conditions precedent to its effectiveness other than a condition requiring the effectiveness of this Financing Agreement, shall have been fulfilled.	6.01	Complied with for all loans and grants
ARTICLE VII. MISCELLANEOUS		
SCHEDULE 1. DESCRIPTION OF THE PROJECT		
The Project shall comprise of transport infrastructure in damaged locations on Efate ring road and climate-and-disaster proofing.	Para 2	Complied with
SCHEDULE 2.		
<u>Communication and Visibility</u> The Recipient shall comply with the Communication and Visibility Guidelines of GEF; and in particular, the Recipient shall include a GEF logo in all relevant Project publications and on any equipment or facility funded by GEF. For the purposes of this provision, "Communication and Visibility Guidelines of GEF" means the communication and visibility guidelines for external actions funded by the GEF included in the communication and visibility policy approved by the GEF Council in May 2011, as amended from time to time.	Schedule 2 Para 2 of GEF G0461 only	Complied with
SCHEDULE 4. ALLOCATION AND WITHDRAWAL OF LOANS AND GRANTS PROCEEDS		
<u>Disbursement Procedures</u> Except as ADB may otherwise agree, the proceeds of the Loans and the Grants shall be disbursed in accordance with the <i>Loan Disbursement Handbook</i> .	Para 5	Complied with
SCHEDULE 5. PROCUREMENT OF GOODS, WORKS AND CONSULTING SERVICES		
<u>General</u> The procurement of Goods, Works and Consulting Services shall be subject to and governed by the Procurement Guidelines, and the Consulting Guidelines, respectively.	Para 1	Complied with
<u>Goods and Works</u> Except as ADB may otherwise agree, Goods and Works shall only be procured on the basis of limited international bidding or direct contracting.	Para 3	No longer relevant. LIB is prescribed in the ADB Disaster and Emergency Assistance Policy explicitly for urgent post disaster emergency works not requiring detailed design. International Competitive Bidding (ICB) was utilized given the near 2-year period between the cyclone event and the release of the civil works bid documents. Relevantly note that the equivalent G0540 (GEF grant) contradicted this covenant – it required ICB.

The method of procurement is subject to, among other things, the detailed arrangements and threshold values set forth in the Procurement Plan. The Beneficiary may only modify the method of procurement or threshold values with the prior agreement of ADB, and modifications must be set out in updates to the Procurement Plan.	Para 4	Complied with.
<u>Conditions for Award of Contract</u> The Borrower shall not award any Works contract for a Subproject which involves environmental impacts until the Project Executing Agency has incorporated the relevant provisions from the corresponding EMP in the Works contract.	Para 5	Complied with
The Borrower shall not award any Works contract involving involuntary resettlement impacts for a Subproject until the Beneficiary has prepared and submitted to ADB the final RP for such Subproject based on the Subproject's detailed design, and obtained ADB's clearance of such RP.	Para 6	Complied with. Note RP was prepared for Epule bridge after decision was made to realign bridge center line.
<u>Consulting Services</u> Except as ADB may otherwise agree, the Beneficiary shall apply quality-and-cost-based selection for selecting and engaging Consulting Services.	Para 7	Complied with. Relevantly note that the equivalent G0540 (GEF grant) covenant contradicted this covenant – it required single source selection.
<u>Industrial or Intellectual Property</u> (a) The Beneficiary shall ensure that all Goods and Works procured (including without limitation all computer hardware, software and systems, whether separately procured or incorporated with other goods and services procured), do not violate or infringe any industrial property or intellectual property right or claim of any third party. (b) The Beneficiary shall ensure that all contracts for the procurement of Goods and Works contain appropriate representations, warranties and, if appropriate, indemnities from the contractor or supplier with respect to the matters referred to in subparagraph (a) of this paragraph.	Para 8	Complied with
The Beneficiary shall ensure that all ADB-finance contract with consultants contain appropriate representations, warranties and, if appropriate, indemnities from the consultants to ensure that the Consulting Services provided do not violate or infringe any industrial property or intellectual property right or claim of any third party.	Para 9	Complied with
<u>ADB's Review of Procurement Decisions</u> Contracts procured under international competitive bidding procedures and contracts for Consulting Services shall be subject to prior review by ADB, unless otherwise agreed between the Beneficiary and ADB and set forth in the Procurement Plan.	Para 10	Complied with
SCHEDULE 6. EXECUTION OF PROJECT		
<u>Implementation Arrangements</u> The Borrower and the Project Executing Agency shall ensure that the Project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM and this Loan Agreement, the provisions of this Loan <i>(or Grant as case may be)</i> Agreement shall prevail.	Para. 1	Complied with
<u>Environment</u> The Borrower shall ensure, and cause the Project Executing Agency to ensure, that the preparation, design and construction, implementation and operation of the Project comply with (a) all applicable laws and regulations of the	Para. 2	Complied with

Borrower relating to environment, health, and safety; (b) ADB's Environmental Safeguards and (c) all measures, and requirements set forth in the IEE and EMP, and any corrective or preventative actions set forth in a Safeguard Monitoring Report.		
<u>Land Acquisition and Involuntary Settlement</u> The Beneficiary shall ensure that all land and all rights-of-way required for each Subproject are made available to the Works contractor in accordance with the schedule agreed under the related Works contract and all land acquisition and resettlement activities are implemented in compliance with (a) all applicable laws and regulations of the Beneficiary relating to environment, health, and safety; (b) the Environmental Safeguards; (c) the EARF; and (d) all measures and requirements set forth in the respective IEE/EIA and EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Para 3	Complied with. Relevantly note that land acquisition associated with the realignment of the Epule bridge realignment took two years due to legal challenges over ownership and lengthy compensation negotiations. This could not have been anticipated at the time of contract development.
Without limiting the application of the Involuntary Resettlement Safeguards, the RF or the RP, the Beneficiary shall ensure that no physical or economic displacement takes place in connection with the Subprojects until: (a) Compensation and other entitlements have been provided to affected people in accordance with the RP; and (b) A comprehensive income and livelihood restoration program has been established in accordance with the RP.	Para 4	Complied with
<u>Indigenous Peoples</u> The Beneficiary shall ensure that the Project does not involve any indigenous peoples risks or impacts, the Beneficiary shall take all steps necessary or desirable to ensure that each Subproject complies with all applicable laws and regulations of the recipient and with the SPS.	Para 5	Complied with
<u>Labour Standards, Health and Safety</u> The Beneficiary shall ensure that the core labor standards and the Beneficiary's applicable laws and regulations are complied with during Project implementation. The Beneficiary shall include specific provisions in the bidding documents and contracts financed by ADB under the Project requiring that the contractors, among other things; (a) comply with the Beneficiary's applicable labor law and regulations and incorporate applicable workplace occupational safety norms; (b) do not use child labor; (c) do not discriminate workers in respect of employment and occupation; (d) do not use forced labor; (e) allow freedom of association and effectively recognize the right to collective bargaining; and (f) disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of contractors engaged under the Project and to members of the local communities surrounding the Project area, particularly women. The Beneficiary shall strictly monitor compliance with the requirements set forth above and provide ADB with regular reports.	Para 6	Complied with
<u>Gender and Development</u> The Beneficiary shall ensure that the principles of gender equity aimed at increasing Project benefits and impacts on women in the Project area consistent with ADB's Policy on Gender and Development (1998) are followed during implementation of the Project, including (a) equal pay to men and women for work of equal value; (b) enabling working conditions for women workers; and (c) taking necessary	Para 7	Complied with. A genuine effort was made across the project to achieve the project gender participation targets. Against the 30% target 27.5% participation was achieved across all consultations. This reduced from the 29.7% at end of Feasibility Study consultations.

actions to encourage women living in the Project area to participate in the design and implementation of Project activities.		The drop in attendance through the latter part of the project was attributable to targeted women not attending the planned CLC meetings. Six (6) CLCs with women and youth representatives were established. Many consultations on land issues (Epule, Mele, Marona) involved just one or two men. Female participation as facilitators was 30% instead of the target 50%. On many occasions personal commitments clashed with scheduled meetings. Where female attendees were not available, meetings would proceed in the interests of achieving progress.
<u>Human and Financial Resources to Implement Safeguards Requirements</u> The Beneficiary shall make available necessary budgetary and human resources to fully implement the EMP and the RP in the event that an RP is prepared in connection with the Project.	Para 8	Complied with
<u>Safeguards – Related Provision in Bidding Documents and Works Contracts</u> The Beneficiary shall ensure that all bidding documents and contracts for Works contain provision that require contractors to: <ul style="list-style-type: none"> (a) Comply with the measures and requirements relevant to the contractor set forth in the IEE/EIA, the EMP, and the RP (to the extent they concern impacts on affected people during construction) and any corrective or preventative actions set out in a Safeguards Monitoring Report; (b) Make available a budget for all such environmental and social measures; (c) Provide the Beneficiary with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE/EIA, and the RP; (d) Adequately record the conditions of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) Fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project conditions upon the completion of construction. 	Para 9	Complied with. IEE with EMP included in bid documents. CEMP and implementation resources approved during contractor mobilization.
<u>Safeguards Monitoring and Reporting</u> The Beneficiary shall do the following: <ul style="list-style-type: none"> (a) Submit semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) If any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEE/EIA, the EMP, or the RP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and (c) Report any actual potential breach of compliance with measures and requirements set forth in the EMP, or the RP promptly after becoming aware of the breach. 	Para 10	Complied with.

<u>Prohibited List of Investments</u> The Beneficiary shall ensure that no proceeds of the Loans and Grants are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.	Para 11	Complied with
<u>Counterpart Support</u> The Beneficiary shall make available all counterpart funds required for timely and effectively implementation of the Project, including any funds required to meet additional costs arising from unforeseen circumstance.	Para 12	Complied with
<u>Governance and Anticorruption</u> The Beneficiary shall (a) comply with ADB's Anticorruption Policy (1998, as amended to date) and acknowledge that ADB reserves the right to investigate directly, or through its agents, any alleged corrupt with any such investigate directly, or through its agents, any alleged corrupt, fraudulent, collusive or coercive practice relating to the Project; and (b) cooperate with any such investigation and extend all necessary assistance for satisfactory completion of such investigation.	Para 13	Complied with
The Beneficiary shall ensure that the anticorruption provisions acceptable to ADB are included in all bidding documents and contracts, including provisions specifying the right of ADB to audit and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Project.	Para 14	Complied with
<u>Project Website</u> Within 90 days of the Effective Date, the Beneficiary shall establish and maintain a Project website which shall be regularly updates. The Project website shall include information on (a) bidding procedures, bidders, and contract awards; (b) use of the funds disbursed under the Project; and (c) physical progress of the Project.	Para 15	Complied with. VPMU website contained regularly updated project information
<u>Debris Removal</u> In the event of any future flooding or other natural disasters, the Beneficiary shall ensure prompt removal of debris from Project facilities and other related areas to ensure sustainability and proper O&M of such Project facilities.	Para 16	Being complied with
<u>Consultation and Participation Plan</u> Within 12 months after the Effective Date, the Beneficiary shall establish that the Project Executing Agency prepares a consultation and participation plan (CPP) acceptable to ADB as described in the PAM.	Para 17	Complied with. Original loan effective on 3 March 2016. CCP accepted by ADB on 6 October 2016.
<u>O&M</u> During Project Implementation and thereafter, the Beneficiary shall ensure that the Project facilities are maintained and that proper technical supervision and adequate routine funds for this purpose are provided. The funds required for the O&M of the Project facilities shall be allocated annually and released on a timely basis. The Beneficiary shall prepare an asset management plan for Efate ring road forecasting routine and periodic maintenance expenditures for 5 years with incremental increases each year for the sustainability of the road assets.	Para 18	Not complied with. O&M budget allocations by year were in Vatu: 2015 493.6 million, 2016 703.8 million, 2017 770.6 million, 2018 639.3 million, 2019 470.9 million, and 2020 463.3 million. Asset Management Plan issued February 2017 and updated September 2017.
The Beneficiary shall ensure that its budget allocation for road maintenance is increased annually, so that adequate funds are made available for O&M of the Project facilities and other transport infrastructure.	Para 19	Not complied with. O&M funds have increased annually. At the end of each fiscal year, MIPU often exceed approved maintenance expenditures with the result that they have been appropriated on average

		about 5% more than their allocated budget.
The Beneficiary shall ensure that road safety audits, accompanied by road safety awareness sessions, are undertaken during the design process, construction, and on existing roads, and shall also ensure that recommendations of the road safety audits are reviewed and promptly incorporated in the design and implemented on existing roads, as appropriate.	Para 20	Complied with. Road safety audits notably resulted in meaningful speed control measures being introduced near the school in Ulei, and improved pedestrian provisions at waterway crossings. The absence of road signs (and perhaps line markings) on the (now high speed capable) 2 nd lagoon to Rentapau road section is a function of the contractor not completing the works required – rather than a failing in the road safety audit process.
<u>Selection Criteria and Approval Processes for Subprojects</u> Feasibility studies prepared for proposed Subprojects shall be endorsed by the project steering committee established for the Project prior to submission to ADB for approval. The Beneficiary, through the Project Executing Agency, shall periodically submit for ADB's approval a list of roads its wishes to propose for Subprojects. The list shall be accompanied by an endorsed feasibility study for each proposed Subproject. The Beneficiary shall ensure that the feasibility studies are prepared with sufficient detail for ADB to assess whether the proposed Subprojects meet the criteria set forth in the PAM and are otherwise suitable and viable.	Para 21	Complied with.
The Beneficiary shall ensure that all documents forming the basis for screening, selection and processing of Subprojects are made available to ADB upon request and are kept available for such purposes for a minimum period of five years from the date of the project completion report for the Project.	Para 22	Being complied with

Source: Asian Development Bank.