



Periodic Financing Request Report

Project Number: 48444-005
MFF Number: 0099
August 2021

Papua New Guinea: Sustainable Highlands Highway Investment Program (Tranche 2)

Distribution of this document is restricted until it has been approved by Management. Following such approval, ADB will disclose the document to the public in accordance with ADB's Access to Information Policy.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 2 August 2021)

Currency unit	–	kina (K)
K1.00	=	\$0.28
\$1.00	=	K3.52

ABBREVIATIONS

ADB	–	Asian Development Bank
COVID-19	–	coronavirus disease
DOW	–	Department of Works and Implementation
DSP	–	Development Strategic Plan
IEE	–	initial environmental examination
IFMS	–	integrated financial management system
km	–	kilometer
MFF	–	multitranches financing facility
MTDP III	–	Medium-Term Development Plan III
NRNS	–	National Road Network Strategy
OCR	–	ordinary capital resources
OFID	–	OPEC Fund for International Development
OPEC	–	Organization of the Petroleum Exporting Countries
PAM	–	project administration manual
PMO	–	program management office
PNG	–	Papua New Guinea

NOTE

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

Vice-President	Ahmed M. Saeed, Operations 2
Director General	Leah C. Gutierrez, Pacific Department (PARD)
Deputy Director General	Emma M. Veve, PARD
Director	David J. Hill, Papua New Guinea Resident Mission (PNRM), PARD
Team leader	Bashirullah Khpalwan, Infrastructure Specialist, PNRM, PARD
Team members	Cindy M.D. Bryson; Safeguards Specialist; Portfolio, Results, and Quality Control Unit (PAOD-PRQ); PARD Maria Rowena Cham, Senior Economics Officer, Economic Analysis and Operational Support Division, Economic Research and Regional Cooperation Department Mary France Creus, Associate Project Analyst, Transport and Communications Division, PARD Joana Custoias, Counsel, Office of the General Counsel Edward Faber, Country Economist, PNRM, PARD Taniela Faletau, Safeguards Specialist, PAOD-PRQ, PARD Ganiga Gomara Ganiga, Senior Project Officer (Infrastructure), PNRM, PARD Prabhjot Khan, Social Development Specialist (Gender and Development), Gender Equity Thematic Group, Sustainable Development and Climate Change Department Grace Korua, Project Analyst, PNRM, PARD Mairi MacRae, Social Development Specialist (Gender and Development), Social Sectors and Public Sector Management Division, PARD Batir Mirbabaev, Senior Partnerships Specialist, Strategic Partnerships Division (SPSP); Strategy, Policy and Partnerships Department (SPD) Rafael Nadyrshin, Senior Procurement Specialist; Procurement Division 2; Procurement, Portfolio and Financial Management Department ^a Noelle O'Brien, Principal Climate Change Specialist, Energy Division, PARD Angela Oswyn, Associate Project Analyst, PNRM, PARD Matthew Rees, Financial Management Specialist, PNRM, PARD Jack Stanley, Senior Safeguards Officer, PNRM, PARD Shiela dela Torre, Partnerships Officer, SPSP, SPD Jean Williams, Principal Environment Specialist, PAOD-PRQ, PARD ^b
Peer reviewer	Jiangbo Ning, Principal Transport Specialist, Transport and Communications Division, Central and West Asia Department

^a Outposted to the Papua New Guinea Resident Mission.

^b Outposted to the Pacific Subregional Office in Suva, Fiji.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

CONTENTS

	Page
TRANCHE AT A GLANCE	
MAP	
I. BACKGROUND	1
II. ASSESSMENT OF MULTITRANCHE FINANCING FACILITY IMPLEMENTATION	3
III. PERIODIC FINANCING REQUEST	5
A. Impacts and Outcome	5
B. Outputs	5
C. Summary Cost Estimates and Financing Plan	5
D. Implementation Arrangements	7
E. Project Readiness	8
IV. DUE DILIGENCE	8
A. Technical	8
B. Economic and Financial	8
C. Governance	9
D. Poverty, Social, and Gender	10
E. Safeguards	10
F. Summary of Risk Assessment and Risk Management Plan	11
V. ASSURANCES	12
VI. THE PRESIDENT'S DECISION	12
APPENDIXES	
1. Design and Monitoring Framework for Tranche 2	
2. Loan Agreement: Ordinary Operations	
3. Loan Agreement: Externally Financed	
4. Loan Agreement: Ordinary Operations (Concessional)	
5. Project Administration Manual for Tranche 2	
6. Updated Contribution to the ADB Results Framework	
7. Economic and Financial Analyses of Tranche 2	
8. Updated Summary of Poverty Reduction and Social Strategy	
9. Procurement Plan	
10. Initial Environmental Examination: Volume I	
11. Initial Environmental Examination: Volume II	
12. Resettlement Plan: Volume I	
13. Resettlement Plan: Volume II	
14. Updated Land Acquisition and Resettlement Framework	

15. Gender Action Plan
16. Updated Risk Assessment and Risk Management Plan
17. Client Feasibility Studies and Engineering Designs
18. Climate Risk Assessment
19. Climate Change Assessment

TRANCHE AT A GLANCE

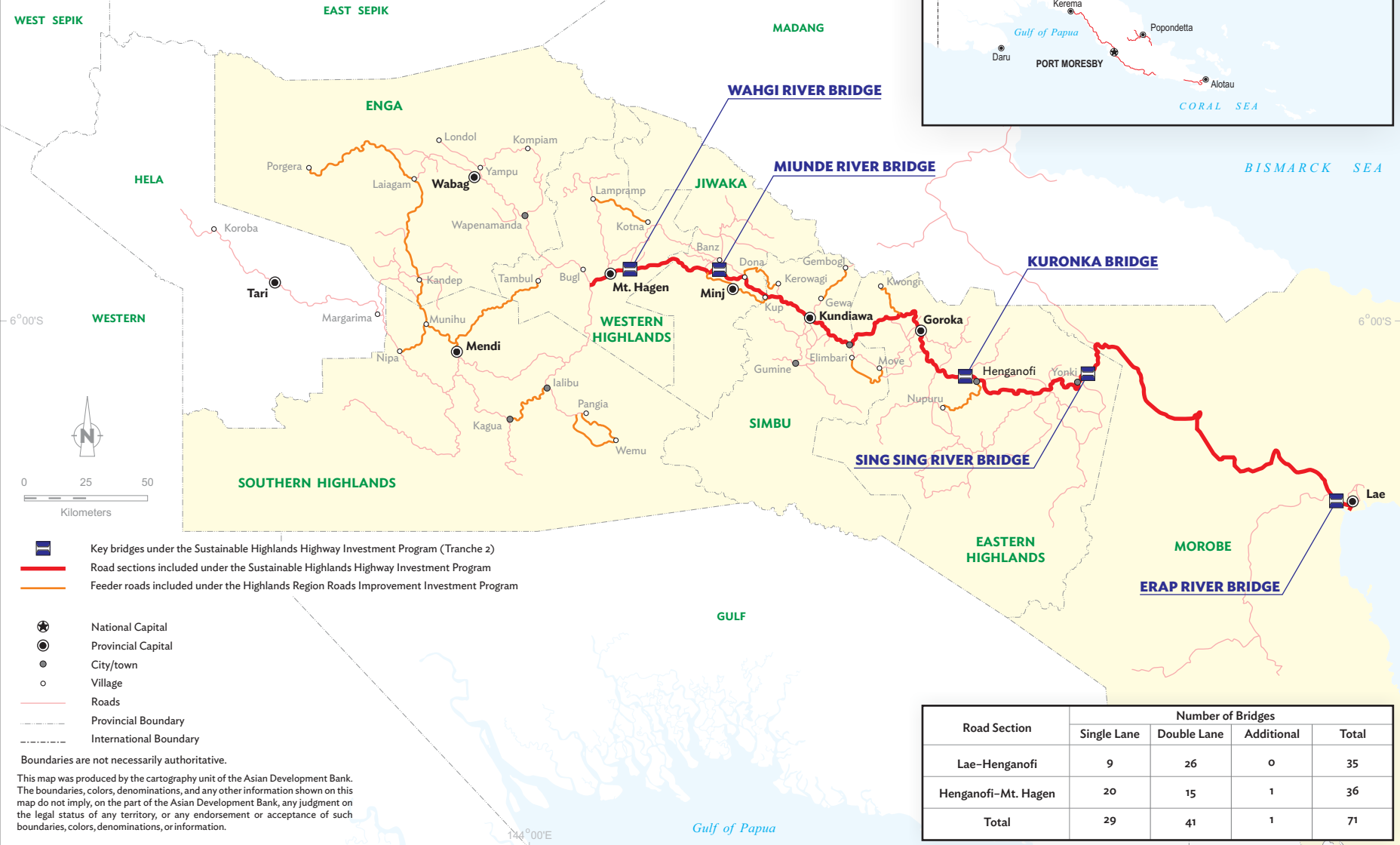
1. Basic Data		Project Number: 48444-005	
Project Name	Sustainable Highlands Highway Investment Program, Tranche 2	Department/Division	PARD/PNRM
Country	Papua New Guinea	Executing Agency	Department of Works and Implementation
Borrower	Government of Papua New Guinea		
Country Economic Indicators	https://www.adb.org/Documents/LinkedDocs/?id=48444-005-CEI		
Portfolio at a Glance	https://www.adb.org/Documents/LinkedDocs/?id=48444-005-PortAtaGlance		
2. Sector		ADB Financing (\$ million)	
✓ Transport	Road transport (non-urban)		308.20
	Transport policies and institutional development		16.80
		Total	325.00
3. Operational Priorities		Climate Change Information¹	
✓ Addressing remaining poverty and reducing inequalities		GHG reductions (tons per annum)	0.000
✓ Accelerating progress in gender equality		Climate Change impact on the Project	High
✓ Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability			
✓ Strengthening governance and institutional capacity			
		ADB Financing	
		Adaptation (\$ million)	65.05
		Mitigation (\$ million)	0.00
		Cofinancing	
		Adaptation (\$ million)	0.00
		Mitigation (\$ million)	0.00
Sustainable Development Goals		Gender Equity and Mainstreaming	
SDG 1.5		Effective gender mainstreaming (EGM)	✓
SDG 5.a			
SDG 9.1			
SDG 10.3		Poverty Targeting	
SDG 13.a		General Intervention on Poverty	✓
4. Risk Categorization:	Complex		
5. Safeguard Categorization	Environment: B Involuntary Resettlement: B Indigenous Peoples: C		
6. Financing			
Modality and Sources		Amount (\$ million)	
ADB		325.00	
Sovereign MFF-Tranche (Concessional Loan): Ordinary capital resources		40.00	
Sovereign MFF-Tranche (Regular Loan): Ordinary capital resources		285.00	
Cofinancing		50.00	
OPEC Fund for International Development - MFF-Tranche (Loan) (Not ADB Administered)		50.00	
Counterpart		20.00	
Government		20.00	
Total		395.00	
Currency of ADB Financing: US Dollar			

¹ The project reduces greenhouse gas emissions. However, it does not fall under the eligibility criteria for climate mitigation finance as defined by the joint multilateral development bank methodology on tracking climate finance, which notes that not all activities that reduce greenhouse gases in the short term are eligible to be counted towards climate mitigation finance. Accordingly, greenfield fossil fuel projects are excluded, and climate mitigation finance is considered zero.

PAPUA NEW GUINEA

SUSTAINABLE HIGHLANDS HIGHWAY INVESTMENT PROGRAM (TRANCHE 2)

Bridge Replacement and Rehabilitation



- Key bridges under the Sustainable Highlands Highway Investment Program (Tranche 2)
 - Road sections included under the Sustainable Highlands Highway Investment Program
 - Feeder roads included under the Highlands Region Roads Improvement Investment Program
 - National Capital
 - Provincial Capital
 - City/town
 - Village
 - Roads
 - Provincial Boundary
 - International Boundary
- Boundaries are not necessarily authoritative.

This map was produced by the cartography unit of the Asian Development Bank. The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.

Road Section	Number of Bridges			Total
	Single Lane	Double Lane	Additional	
Lae-Henganofi	9	26	0	35
Henganofi-Mt. Hagen	20	15	1	36
Total	29	41	1	71

I. BACKGROUND

1. **Multitranche financing facility.** On 22 June 2017, the Board of Directors of the Asian Development Bank (ADB) approved a multitranche financing facility (MFF) of \$866.50 million with an availability period until 30 June 2027 to Papua New Guinea (PNG) for the Sustainable Highlands Highway Investment Program.¹ The investment program will improve the sustainability of the Highlands Highway, the nation's most strategic national road that traverses five provinces in the Highlands Region, PNG's most populous and resource-abundant region. The program will (i) rehabilitate, upgrade, and sustainably maintain 430 kilometers (km) of the Highlands Highway; (ii) improve road safety; (iii) support the establishment of logistics platforms and services for agricultural production; and (iv) improve sector governance through reforms and institutional development. The Department of Works and Implementation (DOW) is the executing agency.

2. The 1,200 km Highlands Highway is the lifeline for the Highlands Region, connecting 1,800 km of regional and feeder roads and serving the region's estimated 4 million people in the rural hinterland. The Highlands Highway connects landlocked mountainous provinces to the coastal province of Morobe and the Lae maritime port. Lae port is PNG's largest and most important seaport, serving as the nation's international gateway and a regional transshipment hub for the eastern reaches of the South Pacific.

3. The Highlands Highway is in worse condition than the overall national sealed road network, primarily because of the rapid growth in heavy vehicles and inadequate maintenance of geotechnically unstable sections. These sections and some bridges require immediate and significant repairs and upgrading to national standards. Other sections require consistent periodic and routine maintenance.

4. The poor condition of the Highlands Highway and the resulting inadequacy of transport services have made the Highlands Region's agricultural products costly to transport to domestic and international markets, limiting their competitiveness. The absence of a reliable highway corridor in the most economically important and demographically populous region of the country has limited the development of logistics facilities and value chains for high-value perishable products. Delays and cuts to the highway, due to poor conditions, are leading to 40% spoilage rates for fresh produce and agricultural commodities bound for Port Moresby. Given that most rural households engage in agricultural livelihood activities, the poor condition of the Highlands Highway is a major constraint on the region's inclusive growth and sustainable development. Following the February 2018 earthquake, the strategic value of the highway (and of the investment program) was further emphasized as it was the main route for the delivery of humanitarian assistance to 40% of the population (about 4 million people).

5. **Impacts of the coronavirus disease pandemic.** Following a rapid spike in infections in March 2021, there have been 17,340 confirmed cases of coronavirus disease (COVID-19) including 179 deaths, as of 13 July 2021. A lack of subnational data continues to impede the government's response. The program will ensure that the contractors are prepared to mitigate potential COVID-19 related risks to the movement of labor, material, and equipment.

6. **Strategic context.** The program is expected to have a transformational impact on PNG. Providing safe and efficient transport along the Highlands Highway is a top government priority

¹ ADB. 2017. [*Report and Recommendation of the President to the Board of Directors: Proposed Multitranche Financing Facility to Papua New Guinea for the Sustainable Highlands Highway Investment Program*](#). Manila.

under PNG's Development Strategic Plan (DSP), 2010–2030;² National Transport Strategy; and Medium-Term Transport Plan, 2014–2018.³ The government's strategic priorities in the road transport sector are focused on developing a safe, reliable, and integrated transport network that supports domestic and international connectivity. To reduce the cost and time of moving people and goods reliably between key economic centers, the government has requested ADB's assistance to rehabilitate and replace key bridge infrastructure on the Highlands Highway, a key cause of closures. The program is strongly aligned with ADB's commitment to small island developing states in promoting rural development and food security for improving market connectivity with focus on rural roads to enhance connectivity and mobility between rural and urban areas that is reflected in ADB's Strategy 2030 and the country partnership strategy for PNG, 2021–2025.⁴

7. **Policy framework.** The government's policy framework as stipulated in the Medium-Term Development Plan III (MTDP III), 2018–2022 also calls for (i) increasing the proportion of roads that are in good condition, (ii) preserving investments in road infrastructure through road maintenance, (iii) encouraging a quality-based focus on new road construction through integrated construction and maintenance contracting arrangements, and (iv) improving road safety infrastructure.⁵ According to the National Road Network Strategy (NRNS), 2018–2037,⁶ the total estimated cost of implementing the roads component in the MTDP III is K22 billion, which comprised K12 billion for upgrading and constructing missing links and K10 billion for maintenance. The primary constraint for NRNS implementation, however, remains the availability of public financing for capital and maintenance works. The financing gap for the NRNS is K15 billion according to the Public Investment Program, 2017–2021. In 2019, oil and commodity price slumps, and the regional economic slowdown in 2020 caused by COVID-19 have presented severe challenges to the government's revenue generation and macro-fiscal reform agenda. In response, the government's economic recovery plan will rely on large-scale public infrastructure projects, reflected in the "Connect PNG" agenda that was endorsed by the National Executive Council (cabinet). The program, along with other ADB portfolio investments, will directly support the government's economic recovery plan and the implementation of the NRNS by (i) financing the upgrading and maintenance of the main arterial roads in the nation, (ii) contributing to much-needed economic activity by connecting three of the largest cities in PNG, and (iii) helping provide an open and reliable corridor for more than half of PNG's passenger and freight traffic.

8. **Sector road map.** Two main goals of the DSP are to (i) maintain 25,000 km of the existing road network (about one-third of the national network) in "good condition,"⁷ and (ii) construct remaining priority missing links to increase connectivity from 2020 to 2030. To achieve these goals, the government will be required to add 16,000 km to the national road network of about 8,000 km by upgrading and reclassifying provincial and other roads and building new roads. Tranche 2 of the investment program is intended to bridge part of the K15 billion financing gap

² Government of Papua New Guinea, Department of National Planning and Monitoring. 2010. [Papua New Guinea Development Strategic Plan, 2010–2030](#). Port Moresby.

³ Government of Papua New Guinea, Department of Transport. 2013. [National Transport Strategy: Volume 3–Detailed Strategy](#). Port Moresby; and Government of Papua New Guinea, Department of Transport. [Medium Term Transport Plan 2, 2019–2022: Volumes 1 and 2](#). Unpublished.

⁴ ADB. 2021. [Pacific Approach, 2021–2025](#). Manila; ADB. 2018. [Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific](#). Manila; and ADB. 2020. [Country Partnership Strategy: Papua New Guinea, 2021–2025—Achieving Diversified, Sustained, and Inclusive Growth](#). Manila.

⁵ Government of Papua New Guinea, Department of National Planning and Monitoring. 2018. [Medium Term Development Plan III, 2018–2022](#). Port Moresby.

⁶ Government of Papua New Guinea, Department of Works and Implementation. 2018. [National Road Network Strategy 2018–2037](#). Port Moresby.

⁷ Defined as 3 or above on the International Road Roughness Index.

with targeted interventions that will increase the stock of national roads in good condition and stem the rate of road deterioration through better maintenance, consistent with the goals of the National Transport Strategy and MTDP III. It was designed with focus on the Highlands Highway, where more than 40% of the country's population lives in and the highway provides access to gas and mineral resources and agricultural areas.

9. **Tranches.** The MFF has three tranches. All tranches will finance parts of the identified projects in sequence with the time-slice approach. Tranche 1 for \$357.5 million was approved on 10 July 2017, comprising \$272 million regular ordinary capital resources (OCR) and \$30 million concessional OCR loans financed by ADB and \$11.5 million grant from the government of Australia.⁸ The government of PNG is financing \$44.0 million as counterpart funding. The loan and grant agreements were signed on 19 July 2017. Tranche 2 is being processed for approval in the third quarter (Q3) of 2021 and tranche 3 is scheduled to be processed in 2022.

10. On 9 March 2020, ADB received a periodic financing request for tranche 2 for \$325 million from the government. The request has been planned for and included in the country operations business plan for PNG, 2021–2023.⁹

II. ASSESSMENT OF MULTITRANCHE FINANCING FACILITY IMPLEMENTATION

11. **Progress on road map.** The program's road map, as agreed in the framework financing agreement that underpins the DSP, remains valid. However, declining trends in government revenue that existed when the program was approved in 2017 have been exacerbated by commodity price shocks, and the DSP goals for the transport sector up to 2018 have not been fully met, as highlighted in the MTDP III. Despite the continued erosion of revenues, because of the COVID-19 pandemic, road improvement and maintenance, particularly on the Highlands Highway, remains a top priority for the government.¹⁰ The NRNS and MTDP III share a common theme of sustainability, which calls for continued investment in rehabilitation and maintenance of key national roads. The Highlands Highway has remained a critical component of the 2021 budget, reflecting this priority. To help support the DSP's connectivity goals, ADB also supported the improvement of rural roads and bridges through two investment programs completed in 2020 that focused on rehabilitating the provincial road network to improve connectivity between priority rural hubs.¹¹

12. **Improvements in policy framework.** The government launched the NRNS in 2018, which reemphasizes maintenance (through the "Maintenance First" policy) to meet the DSP goals. It sets out an investment plan for preserving road networks and the Core National Road Network of 17 key corridors totaling about 2,300 km. According to the NRNS, these sections have priority

⁸ ADB. 2017. [Periodic Financing Request Report: Papua New Guinea: Sustainable Highlands Highway Investment Program – Tranche 1](#). Manila.

⁹ ADB. 2020. [Country Operations Business Plan: Papua New Guinea, 2021–2023](#). Manila.

¹⁰ The priority and core roads identified in the NRNS are (i) Highlands Highway, (ii) Boluminsky Highway, (iii) Koroba to Mendi Road, (iv) Pogera Road, (v) Enga Highway, (vi) Wabag–Mendi Highway, (vii) New Britain Highway, (viii) Sepik Highway, (ix) Coastal Highway, (x) Baiyer Road, (xi) Hiritano Highway, (xii) Kokoda and Northern Highways, (xiii) Wau Road, (xiv) Buka Road, (xv) Magi Highway, (xvi) Ramu Highway, and (xvii) West Coast Road.

¹¹ ADB. [Papua New Guinea: Highlands Region Road Improvement Investment Program – Project 3](#); and ADB. [Papua New Guinea: Bridge Replacement for Improved Rural Access Sector Project](#).

over other road sections for receiving funding to maintain the roads in “fair–good” condition, and to rehabilitate and improve roads from “poor” condition to “good” condition.¹²

13. **Progress of investment program.** Program and tranche 1 implementation is behind schedule. Tranche 1 civil works commenced in February 2019 and are scheduled to end in January 2023. Works are being performed under three contracts collectively valued at approximately \$230.5 million. The works are being supervised by two separate engineering consulting firms under contracts totaling \$31.7 million. The total completion of physical works under the three civil works contracts at the end of June 2021 was 45% and approximately \$119 million (51.6%) has been disbursed. Tranche 1 implementation is behind schedule because of procurement delays, slow mobilization, and the COVID-19 pandemic, which has limited movement of key contractor personnel. The contractors have revised their work programs to accelerate some of the activities and minimize the delays. However, the tranche 1 completion date may require extension, which will be assessed in Q3 2021.

14. **Safety improvements.** Improved road safety, including pedestrian safety, is an integral component of tranche 1 civil works. The construction of pedestrian paths and signs in school locations, lane and safety markings, and barriers in hazardous locations will increase safety for all road users. An international road safety expert has been working with the DOW since October 2019 to improve the impact of the safety awareness program implemented by the construction supervision consultants. A road safety action plan has been completed and is under implementation.

15. **Transport logistics and services and sustainability measures.** These will be implemented in tranche 3. Two trade and freight logistics platforms and two weighbridge stations will be designed and constructed in Goroka and Mount Hagen, and construction of bypass road in Goroka, after the road and bridge improvements are completed in tranche 1 and tranche 2, to minimize future pavement damage from overloading.

16. **Institutional capacity strengthening.** One of the main outputs of this component in tranche 1 is that the new building for the program management office (PMO) in Goroka was completed and occupied by the PMO in July 2020. Under tranche 1, more than 175 staff have completed training in financial management, procurement, and safeguards. Training of DOW staff in financial management and procurement is ongoing and will continue in tranche 2.

17. **Compliance with undertakings and loan covenants.** A project review mission in October 2020 reviewed the status of the covenants of the loan and grant agreements of tranche 1. The borrower and the executing agency are carrying out project operation and performing their obligations set forth in schedule 5 of the loan agreement (specifically Article IV, sections 4.01–4.04 and schedule 5, paras. 1–17); and covenants are being complied with. The government has also complied with the undertakings of the framework financing agreement.

18. **Timeliness of tranche 2.** Upgrading of the bridges on Highlands Highway in tranche 2 contributes directly to the program outcome of travel time savings because of a reduction in road closures, which frequently occur because of bridge damages and failures. Tranche 2 is running in parallel with the tranche 1 civil works schedule, and readiness is high with advance procurement action having been agreed upon accordingly; its timeliness is rated *on track* with expected

¹² Based on the National Road Network Strategy, 2018–2037 in footnote 6, Table 2.1–2, pp 3, Sub-Section II. The National Road Network, the road conditions are graded based on the pavement condition index (PCI), Good PCI > 7, Fair PCI 4–7, and Poor PCI < 4.

approval in August 2021.¹³ Advance procurement for three civil works contracts and two construction supervision packages is underway, with contract awards scheduled for Q3 2021. The request for tranche 3 is expected in early 2022 for approval in the same year. The feasibility study and detailed engineering design for tranche 3 will be completed before the end of 2022. This will allow tranche 3 to be completed before the end of the MFF availability period of June 2027.

III. PERIODIC FINANCING REQUEST

A. Impacts and Outcome

19. Tranche 2 is aligned with the following impacts: (i) opportunity for equality and prosperity in rural areas increased (footnote 2); (ii) well-integrated, safe, affordable, and financially and environmentally sustainable transport systems attained that will efficiently serve the economy and people of PNG (footnote 3); and (iii) a safe, reliable, and sustainable national road network developed and maintained (footnote 6). Tranche 2 will have the following outcome: efficiency and safe movement of people, goods, and services between the Highlands Region and markets increased.¹⁴

B. Outputs

20. **Output 1:** Seventy-one bridges along the national Highlands Highway, comprising 41 two-lane and 30 single-lane bridges, between Lae Nadzab Airport to Kagamuga Airport in Mount Hagen will be upgraded to meet current national design standards and mitigate climate change risks. The rehabilitation or replacement of these 71 bridges is highly complementary to the pavement works ongoing under tranche 1. The bridges will be (i) designed with pedestrian walkways separated by rails or barriers, and easily accessible to senior citizens, people with disabilities, and children; and (ii) provided with lighting, where possible. At least 20 water points for washing and bathing will be installed on bridges; and will increase gender-related awareness in communities around roads.

21. **Output 2:** Capacity of the DOW to design, construct, and manage all bridges in the national highway network will be increased. DOW's bridge asset management will complete the inventory of 300 bridges by December 2024. DOW technical staff, including 3 females, will be trained to improve knowledge in conducting bridge condition assessment using advanced design techniques.

C. Summary Cost Estimates and Financing Plan

22. Tranche 2 is estimated to cost \$395.0 million (Table 1).¹⁵

¹³ ADB. 2018. [Staff Instruction on Business Processes for Multitranchise Financing Facility](#). Manila (Table 2: Rating Criteria for Multitranchise Financing Facility).

¹⁴ The Design and Monitoring Framework for Tranche 2 is in Appendix 1 and the Updated Contribution to the ADB Results Framework is in Appendix 6.

¹⁵ Detailed cost estimates by expenditure category and by financier are included in the project administration manual in Appendix 5.

Table 1: Summary Cost Estimates
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Output 1: 71 Bridges upgraded along Highlands Highway	335.8
2. Output 2: Increased capacity of the DOW to manage bridge inventory	5.2
Subtotal (A)	341.0
B. Contingencies^c	32.2
C. Financing Charges During Implementation^d	21.8
Total (A+B+C)	395.0

DOW = Department of Works and Implementation.

^a Includes taxes and duties of \$30 million to be financed from the Asian Development Bank and cofinancier resources.

^b In mid-2019 prices as of February 2020.

^c Physical contingencies computed at 10% for civil works. Price contingencies computed at an average of 1.5% on foreign exchange costs and 3.7% on local currency costs; includes provision for exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction for the ordinary capital resources loan(s) has been computed at the 5-year United States dollar fixed swap rate plus an effective contractual spread of 0.5% and maturity premium of 0.2%. Commitment charges for the ordinary capital resources loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

23. The government has requested (i) a regular loan of \$285.0 million, and (ii) a concessional loan of \$40.0 million from ADB's ordinary capital resources to help finance part of tranche 2. The regular loan will have a 25-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; a commitment charge of 0.15% per year (interest and other charges during construction to be capitalized in the loan); and such other terms and conditions set forth in the draft loan agreements. Based on the straight-line method, the average maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per year. The concessional loan will have a 25-year term, including a grace period of 5 years; an interest rate of 2.0% per year during the grace period and thereafter (the interest and other charges during construction and commitment charges to be capitalized in the loan).¹⁶ The government has also requested a loan of \$50 million from the Organization of the Petroleum Exporting Countries (OPEC) Fund for International Development (OFID). This is a parallel loan that will be administered by OFID.

24. The summary financing plan is in Table 2. ADB will finance the expenditures related to civil works, consulting services, project administration, financing charges during construction, and taxes and duties. The government will finance land acquisition, interest during construction (for the OFID loan), and contingencies for a total of \$20.0 million.

25. Climate adaptation is estimated to cost \$79.05 million. ADB will finance 82% (\$65.05 million) of adaptation costs.¹⁷

¹⁶ Other terms and conditions are set forth in the draft loan agreements for tranche 2 in Appendixes 2–4.

¹⁷ The Climate Change Assessment is in Appendix 19.

Table 2: Summary Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (regular loan)	285.0	72.0
Ordinary capital resources (concessional loan)	40.0	10.0
OPEC Fund for International Development	50.0	13.0
Government of Papua New Guinea ^a	20.0	5.0
Total	395.0	100.0

OPEC = Organization of the Petroleum Exporting Countries.

^a Includes the government's counterpart contribution and land acquisition costs.

Source: Asian Development Bank estimates.

D. Implementation Arrangements

26. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual (PAM) in Appendix 5.

Table 3: Implementation Arrangements for Tranche 2

Aspects	Arrangements		
Implementation period	September 2021–December 2025		
Estimated completion date	31 December 2025		
Estimated loan closing date	30 June 2026		
Management			
(i) Oversight body	Program Steering Committee Chair: Secretary for Department of Prime Minister and NEC Members: (i) DOW Secretary; (ii) DTR Secretary; (iii) DNPM Secretary; (iv) DOT Secretary; and (v) Secretary: provincial administrators from Morobe, Eastern Highlands, Chimbu, Jiwaka, and Western Highlands		
(ii) Executing agency	DOW		
(iii) Key implementing agency	DOW		
(iv) Implementation unit	PMO-DOW in Goroka, 32 staff		
Procurement	International competitive bidding (civil works)	3 contracts	\$290.0 million
Consulting services	QCBS (90:10): supervision consulting firm, bridge 1	686 person-months	\$15.0 million
	QCBS (90:10): supervision consulting firm, bridge 2	686 person-months	\$15.0 million
	QCBS (90:10): bridge asset management system training and capacity building	150 person-months	\$5.0 million
	Individual consultant selection (PMO)	216 person-months of international and 936 person-months of national consulting services	\$10.0 million
Retroactive financing and/or advance contracting	Advance contracting for the procurement of works and consulting services and retroactive financing for eligible expenditures for works and consulting services incurred before loan effectiveness, but not earlier than 12 months before loan signing, subject to a maximum equivalent to 20% of the respective loan amount.		
Disbursement	Disbursement of the loan proceeds will follow ADB's <i>Loan Disbursement Handbook</i> (2017, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, DNPM = Department of National Planning and Monitoring, DOT = Department of Transport, DOW = Department of Works and Implementation, DTR = Department of Treasury, NEC = National Executive Council, PMO = program management office, QCBS = quality- and cost-based selection.

Source: Asian Development Bank.

27. The procurement of works and goods will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time). A formula for abnormally low bid

and affiliate company guarantee is included in the bidding documents to make sure the offered bid price is in compliance with the contract requirements. Consultants will be recruited in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).¹⁸

E. Project Readiness

28. **Advance contracting.** The level of readiness is high. The DOW has commenced procurement of civil works, selection of construction supervision consultant, and staffing the PMO as advance actions. Three consulting packages were advertised, and the expressions of interest reviewed and shortlisted. The requests for proposal were issued to the shortlisted firms and the firm's proposals are being evaluated. Bidding documents for three civil works packages for design-build were endorsed by ADB and were tendered in October 2020, with bid submission on 15 January 2021; DOW is currently evaluating the bids. Contract award is expected in Q3 2021. Design-build procurement is expected to save time that otherwise would be needed for completing the detailed design. The government has been informed that ADB approval of advance contracting does not commit ADB to finance the proposed subprojects or related procurement costs.

IV. DUE DILIGENCE

A. Technical

29. ADB reviewed the DOW's study of bridge conditions, preliminary designs to minimize climate change risks, environmental and social impacts, and civil works costs. The DOW study revealed that 71 bridges (comprising 41 two-lane and 30 single-lane bridges) do not meet the national weight and safety standards and are at risk from the impacts of climate change. Of the two-lane bridges, 25 can be rehabilitated and 16 must be replaced. All single-lane bridges, including one culvert, must be replaced with two-lane bridges. The reconstruction works involve pile foundation; reinforced concreting of piers and abutments; and the addition of steel girders and concreting of the bridge deck, handrails, guard rails, the pavement of approach roads, and road furniture. The upgrades in some cases will include strengthened bridge piers and foundations and raised bridge deck heights to increase the hydraulic capacity to mitigate the risk of flooding and extreme precipitation. Expansion joints and bearings will be improved to account for higher temperatures and extreme heat. Civil works are divided into three packages based on the distribution of the bridges along the 430 km length of the roadway, the availability of contractors, and the ongoing works in tranche 1. The contractors will be responsible for the detailed design of the replacements and rehabilitation works. Two separate engineering firms will supervise the works. Their terms of reference have been prepared specifically for the design-build procurement method. One consulting firm will be engaged for the capacity development component.

B. Economic and Financial

30. The estimated economic internal rate of return is 27% and the net present value of tranche 2 is \$538 million.¹⁹ The investment remains viable up to a 213% increase in costs or a 70% decrease in benefits, and the economic return will be 17% even if there is no growth in

¹⁸ The Procurement Plan is in Appendix 9.

¹⁹ ADB. 2017. [Guidelines for the Economic Analysis of Projects](#). Manila; and ADB. 2017. [Staff Instruction on Business Processes for Economic Analysis of Projects](#). Manila.

traffic.²⁰ The estimated cost of civil works is based on February 2020 prices for the local and foreign components.²¹ Physical and price contingencies have been estimated with due regard to the foreign and domestic inflation rates, exchange rate changes, and implementation period.

31. The financial analysis showed that the government budget allocations for road maintenance have increased at an average annual rate of about 15%. However, by 2018 the annual requirement had reached \$300 million, and the funding shortfall was more than 50% (footnote 5). Revenue from road users in the form of fuel taxes and operating licenses has also increased from 2016 to 2020, but it remains insufficient to finance even emergency works. The administrative structure has yet to be changed to permit tolls on any of the facilities. Therefore, the government agreed with ADB to include and finance a 5-year maintenance post-construction components in civil works contracts for upgrading the roads and bridges under the program to promote sustainability of the investment. It is committed to implementing the NRNS, which will provide the estimated \$1.1 million per year for maintaining these structures after the initial contracts expire.²² Moreover, the government is implementing measures in the new works to extend the service life of the roads and bridges and reduce maintenance costs, which will reduce the sustainability risk because of limited public funds for the DOW. The design of the bridges under tranche 2 will consider appropriate measures to minimize climate change risk. These designs will extend the service lives of the roads and bridges and reduce maintenance costs, which will reduce the sustainability risk because of limited public funds.

C. Governance

32. **Financial management.** Several financial management risks were identified during the financial analysis (footnote 19) and financial management assessment deemed the overall risk *high*.²³ The mitigation measures proposed by the government were found to be sufficient for the satisfactory implementation of tranche 2. Some risks that prevailed during tranche 1 processing have been addressed. The DOW has engaged specialist staff for the PMO who are implementing financial management procedures that comply with ADB policies and guidelines. Internal auditing of the program by the DOW's internal audit division has yet to be implemented. The government's integrated financial management system (IFMS) has yet to be implemented in its provincial offices to enable consistent reporting and reduce the risk of inaccurate or misleading reporting. Key staff positions in the DOW's financial management departments, including regional offices, will be trained during 2021 and 2022. ADB's fact-finding mission for tranche 2 discussed the implementation progress with the DOW and the government. The DOW confirmed that the roll out of the IFMS to its provincial offices begun in 2021 and is ongoing, however, the implementation is slow due to COVID-19 and is scheduled to be completed in 2022. Upgrading the bridge asset management system of tranche 2, will also contribute to improving financial management of the program and future DOW bridge investments through optimal and timely allocation of resources and asset performance monitoring.

33. **Procurement and anticorruption.** A project procurement risk assessment of tranche 2 has revealed that the overall procurement risk is *substantial*, and the corruption and fraud risk is *significant* based on the past proactive integrity reviews. The DOW has addressed the procurement risk stemming from human resource limitations and inadequate documentation by recruiting specialists under tranche 1. The PMO's international contract management specialist

²⁰ The Economic and Financial Analyses of Tranche 2 is in Appendix 7.

²¹ ADB. 2005. [Financial Management and Analysis of Projects](#). Manila.

²² Assuming \$2,500 per km for simple patching, crack sealing, painting, roadside vegetation control, clearing drains, etc.

²³ ADB. 2015. [Financial Management Technical Guidance Note](#). Manila.

is training DOW staff on best practices in procurement and corruption and fraud prevention and is responsible for disclosing procurement information and disseminating anticorruption information in a timely manner. The information technology specialist is setting up the documentation and communication system linking the PMO with DOW headquarters and updating the PMO portal for better presentation of ADB's Anticorruption Policy (1998, as amended to date), Integrity Principles and Guidelines (2015, as amended from time to time), and project performance reports. ADB discussed these issues with DOW management and the issues are highlighted in the PAM. The DOW is recruiting an international specialist to conduct independent technical compliance audits and ensure adherence to the National Procurement Act 2018 and the ADB Procurement Guidelines. Mitigation measures are summarized in Table 4.

34. ADB's Anticorruption Policy was explained to and discussed with the government and the DOW. The specific policy requirements and procedures for contract variations, review of payment certificates, and financial auditing were discussed with the DOW and PMO during tranche 2 processing, and are described in the PAM.

D. Poverty, Social, and Gender

35. The program is classified as a general intervention. Road users will benefit from shorter travel times and lower vehicle operating costs. Sidewalks and safety barriers on the new bridges will enhance pedestrian and bicycle safety. Maintaining the road and enhanced connectivity will increase mobility and encourage farmers to shift from subsistence to market-based agriculture, and in large quantities. These will also be shipped faster to the markets and will thus increase agricultural productivity and boost farm and nonfarm incomes. It will create more opportunities for about 3 million people in the Highlands Region as well as businesses and widen access to social services.²⁴

36. Tranche 2 is categorized *effective gender mainstreaming* (EGM). The gender action plan includes targeted activities to maximize the project's benefits to communities and women.²⁵ Physical and nonphysical interventions under the program include road safety improvements and awareness, washing facilities near the bridges, and logistics centers at selected locations along the road. Tranche 1 (EGM) has achieved the following gender mainstreaming targets: women's participation of (i) about 39% in public and/or community consultations, (ii) about 13% in construction, and (iii) 8% in work safety workshops. The gender action plan for tranche 2 sets minimum thresholds for women's participation and employment during construction, including in training sessions for all construction work staff on preventing and responding to sexual harassment, exploitation, and abuse. Increased access to social services, economic opportunity, and consumer choice is expected to significantly increase the welfare of women and household incomes, and subsequently reduce poverty.

E. Safeguards

37. In compliance with ADB's Safeguard Policy Statement (2009), tranche 2's safeguard categories are as follows.²⁶

38. **Environment (category B).** The DOW has updated the environmental assessment and review framework prepared for the program. It has conducted an initial environmental examination

²⁴ The Updated Summary of Poverty Reduction and Social Strategy is in Appendix 8.

²⁵ The Gender Action Plan is in Appendix 15.

²⁶ ADB. [Safeguard Categories](#).

(IEE), which confirms that tranche 2 activities have no adverse environmental impact, and any potential temporary impacts during construction can be mitigated. The IEE reports and environmental monitoring plans will be updated, if necessary, after the detailed designs are completed by the contractor, and ADB will review them to check their compliance with ADB's Safeguard Policy Statement. An updated framework and the IEE reports have been disclosed in ADB website.

39. **Involuntary resettlement (category B).** The alignment of some replacement bridges will be changed to improve traffic safety and bridge sustainability. This will trigger involuntary acquisition of land for permanent and temporary use. There will be some impacts on assets and improvements (crops, trees, and bamboo grooves). The DOW has prepared resettlement plans, which have been disclosed to the affected people and disclosed on the ADB website. Further updates to the plans, will be made after the detailed designs are completed and disclosed after ADB approval.

40. **Indigenous peoples (category C).** No person who can be defined as indigenous is in the project areas.

F. Summary of Risk Assessment and Risk Management Plan

41. The significant risks and mitigating measures are summarized in Table 4.²⁷

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigation Measures
Macroeconomic: Shortage of public funds from 2016 to 2020 has reduced budget for road maintenance and asset preservation	ADB had included long-term performance-based maintenance in the civil works contracts. Development partners are providing long-term maintenance funds.
Sustainability of the works and reforms: Delay in response to road damage because of extreme weather and geophysical events and frequent changes in policies; gap in budget allocations and cost of asset preservation	Tranche 2 incorporates design parameters (described in paras. 20 and 29) to minimize the impact of extreme weather events and geophysical events. The government's commitment to new asset preservation strategies implemented as part of the National Road Network Strategy, 2018–2037. Tranche 2 including post-completion performance-based maintenance in civil works contracts as in tranche 1.
Implementation capacity: Delays because of land acquisition, contractor mobilization, inadequate oversight of works because of inexperienced staff, and inadequate DOW staff assigned to be trained	Tranche 2 will use advance contracting, advance preparation, and disclosure of safeguard documents, and the government will allocate funds in a timely manner for land acquisition. Tranche 2 will continue with technical advice and training to DOW staff on procurement, contract administration, through long-term consultancy services. The DOW is assigning dedicated staff to be trained in bridge asset management system updates.
Fraud and corruption: Lack of due diligence and transparency in procurement and contract administration	ADB and the DOW have agreed on anticorruption measures specific to the program and tranche 2, which are included in the project administration manual. The DOW has commenced coordinating and has agreed with ADB on adhering to procurement and contract administration requirements, particularly on advertising and disclosing notices, contract awards, sanctions, and corrupt practices on DOW websites.

²⁷ The Updated Risk Assessment and Risk Management Plan is in Appendix 16.

Risks	Mitigation Measures
	<p>The DOW is recruiting an independent assurance specialist financed from tranche 1 of the program to perform biannual technical audits together with National Procurement Commission and reporting to the DOW secretary on the degree of compliance of the procurement process with ADB and National Procurement Commission policies, guidelines, and procedures.</p> <p>ADB will oversee submission of accurate and timely internal audit reports, annual financial audit reports, safeguard reports, and project progress reports according to the project administration manual and ADB project administration instructions quarterly and periodic anticorruption training for DOW staff and goods and services providers.</p> <p>ADB will continue its efforts to make DOW staff and contractors aware of anticorruption and fraud policies, by a mixture of training and provision of information.</p>
<p>Public financial management: Weak country-level arrangements; lack of qualified staff; delays in processing, reporting, and monitoring; and non-uniformity of information system</p>	<p>ADB supports the strengthening of government public financial management systems through the Financial Management Improvement Program.</p> <p>The DOW is implementing an IFMIS that includes all regional and provincial offices to have a single unified financial management system, allowing more complete and timely monitoring against budget and completion milestones.</p> <p>DOW finance and accounting staff skills in regional and provincial offices are being upgraded under tranche 1 with training for IFMIS system administrators.</p> <p>DOW staff capacity is being addressed at both the project and executing agency levels with continued training and monitoring by ADB's Papua New Guinea Resident Mission. PNRM will oversee the completion of the financial management processing manual and coordinate spot checks of payments against the process.</p>

ADB = Asian Development Bank, DOW = Department of Works and Implementation, IFMIS = integrated financial management information system.

Source: Asian Development Bank.

V. ASSURANCES

42. The government and the DOW have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, financial management, and disbursement as described in detail in the updated facility administration manual and loan documents.

43. The government and the DOW have agreed with ADB on certain covenants for the project, which are set forth in the loan agreements.

VI. THE PRESIDENT'S DECISION

44. On the basis of the approval by ADB's Board of Directors for the provision of loans under the multitranches financing facility in an aggregate principal amount not exceeding \$866,500,000 to Papua New Guinea for the Sustainable Highlands Highway Investment Program, the President has approved the tranche as described in para. 23 and such other terms and conditions as are substantially in accordance with those set forth in the draft loan agreements.

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
	<p>1c. Travel time between Lae Nadzab Airport and Kagamuga Airport in Mount Hagen reduced to 8 hours for about 1.5 million female travelers living in the five provinces directly served by the project (2019 baseline: 10 hours)</p> <p>1d. Increased awareness in communities around roads constructed on prevention of gender-based violence and sexual exploitation, abuse, and harassment against women and children in communities</p>		
2. Capacity of the DOW to design, construct, and manage all bridges in the national highway network increased	<p>2a. The DOW's BAM component of the highway information management system is up to date by December 2024 with complete data on 300 bridges on the national road network, including the 71 improved bridges under tranche 2 (2019 baseline: 120 bridges)</p> <p>2b. At least 15 DOW technical staff, including 3 females, with improved knowledge in conducting bridge condition assessment and updating and using BAM, and in advanced design techniques (2019 baseline: 6 trained in BAM and 0 trained in advanced bridge design techniques)</p>	<p>2a. ADB review missions and consultants' progress reports</p> <p>2b. Data from surveys of staff participating in training programs, reported in ADB's project completion report</p>	

Key Activities with Milestones

1. 71 bridges along the national Highlands Highway between Lae Nadzab Airport and Kagamuga Airport in Mount Hagen upgraded

- 1.1 Complete selection of consultants for bridge civil works supervision and consultants for capacity development (October 2021)
- 1.2 Complete award of civil works contracts (October 2021)
- 1.3 Complete civil works (December 2025)

2. Capacity of the DOW to design, construct, and manage all bridges in the national highway network increased

- 2.1 Deliver BAM training program (June 2022)
- 2.2 Collect bridge data (June 2024)
- 2.3 Update BAM system with newly collected data (December 2024)
- 2.4 Complete professional training of bridge design engineers (December 2024)

Inputs

ADB: \$325 million (\$285 million regular OCR loan and \$40 million concessional OCR loan)

Government of Papua New Guinea: \$20 million

OPEC Fund for International Development: \$50 million (loan)

ADB = Asian Development Bank, BAM = bridge asset management, DOW = Department of Works and Implementation, OCR = ordinary capital resources, OPEC = Organization of the Petroleum Exporting Countries, R = risk.

^a Government of Papua New Guinea, Department of National Planning and Monitoring. 2010. [Papua New Guinea Development Strategic Plan, 2010–2030](#). Port Moresby.

^b Government of Papua New Guinea, Department of Transport. 2013. [National Transport Strategy: Volume 3–Detailed Strategy](#). Port Moresby.

^c Government of Papua New Guinea, Department of Works and Implementation. 2018. [National Road Network Strategy, 2018–2037](#). Port Moresby.

Source: Asian Development Bank.