Report and Recommendation of the President to the Board of Directors

Project Number: 48444-002
June 2017

Proposed Multitranche Financing Facility
Papua New Guinea: Sustainable Highlands Highway Investment Program

Distribution of this document is restricted until it has been approved by the Board. Following such approval, ADB will disclose the document to the public in accordance with ADB’s Public Communications Policy 2011.

Asian Development Bank
CURRENCY EQUIVALENTS
(as of 20 May 2017)

Currency unit – kina (K)

K1.00 = $0.32
$1.00 = K3.10

ABBREVIATIONS

ADB – Asian Development Bank
CADIP – Civil Aviation Development Investment Program
COL – concessional OCR lending
DOW – Department of Works
km – kilometer
HRRiIP – Highlands Region Road Improvement Investment Program
MFF – multitranche financing facility
MTDP – medium-term development plan
NRA – National Roads Authority
NTS – National Transport Strategy
OCR – ordinary capital resources
PIU – project implementation unit
PMO – program management office
PNG – Papua New Guinea

NOTES

(i) The fiscal year (FY) of the Government of Papua New Guinea ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2014 ends of 31 December 2014.

(ii) In this report, "$" refers to United States dollars.
### Team leader
- D. Hill, Country Director, Papua New Guinea Resident Mission (PNRM), PARD

### Team members
- G. Alcasabas-Bantaya, Operations Assistant, PARD
- Y. Basnett, Country Economist, PNRM, PARD
- N. Carandang, Safeguards Specialist, PARD
- K. Emzita, Assistant General Counsel, Office of the General Counsel (OGC)
- G. Ganiga, Senior Project Officer (Infrastructure), PNRM, PARD
- H. Haider, Infrastructure Specialist, PNRM, PARD
- S. Handayani, Principal Social Development Specialist, Sustainable Development and Climate Change Department
- S. Khan, Senior Portfolio Management Specialist, Nepal Resident Mission, South Asia Department
- D. Ling, Transport Specialist, PARD
- C. Rhor, Senior Procurement Specialist, Operations Services and Financial Management Department
- J. Roop, Senior Natural Resources Specialist, PARD
- A. Salvador, Operations Officer, PARD
- J. Stanley, Safeguards Officer, PNRM, PARD
- A. Syed, Senior Counsel, OGC
- J. Williams, Senior Environment Specialist, PARD

### Peer reviewers
- J. Miller, Principal Transport Specialist, Southeast Asia Department
- J. Ning, Principal Transport Specialist, Central and West Asia Department

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

## INVESTMENT PROGRAM AT A GLANCE

### MAP

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. THE PROPOSAL</td>
<td>1</td>
</tr>
<tr>
<td>II. THE INVESTMENT PROGRAM</td>
<td>1</td>
</tr>
<tr>
<td>A. Rationale</td>
<td>1</td>
</tr>
<tr>
<td>B. Impacts and Outcome</td>
<td>5</td>
</tr>
<tr>
<td>C. Outputs</td>
<td>5</td>
</tr>
<tr>
<td>D. Investment and Financing Plans</td>
<td>6</td>
</tr>
<tr>
<td>E. Implementation Arrangements</td>
<td>7</td>
</tr>
<tr>
<td>III. DUE DILIGENCE</td>
<td>9</td>
</tr>
<tr>
<td>A. Technical</td>
<td>9</td>
</tr>
<tr>
<td>B. Economic and Financial</td>
<td>9</td>
</tr>
<tr>
<td>C. Governance</td>
<td>9</td>
</tr>
<tr>
<td>D. Poverty and Social</td>
<td>10</td>
</tr>
<tr>
<td>E. Safeguards</td>
<td>10</td>
</tr>
<tr>
<td>F. Risks and Mitigating Measures</td>
<td>11</td>
</tr>
<tr>
<td>IV. ASSURANCES</td>
<td>12</td>
</tr>
<tr>
<td>V. RECOMMENDATION</td>
<td>12</td>
</tr>
</tbody>
</table>

## APPENDIXES

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design and Monitoring Framework for the Investment Program</td>
<td>13</td>
</tr>
<tr>
<td>2. List of Linked Documents</td>
<td>16</td>
</tr>
</tbody>
</table>
## INVESTMENT PROGRAM AT A GLANCE

### 1. Basic Data

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Country</th>
<th>Borrower</th>
<th>Department</th>
<th>Division</th>
<th>Executing Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>48444-002</td>
<td>Sustainable Highlands Highway Investment Program</td>
<td>Papua New Guinea</td>
<td>Government of Papua New Guinea</td>
<td>PARD/PATE</td>
<td></td>
<td>Department of Works</td>
</tr>
</tbody>
</table>

### 2. Sector

**Subsector(s):** Transport

- Road transport (non-urban)
- Transport policies and institutional development
- Urban roads and traffic management

**ADB Financing ($ million):**

<table>
<thead>
<tr>
<th>Subsector</th>
<th>Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>610.00</td>
</tr>
<tr>
<td>Transport policies and institutional development</td>
<td>30.00</td>
</tr>
<tr>
<td>Urban roads and traffic management</td>
<td>40.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>680.00</strong></td>
</tr>
</tbody>
</table>

### 3. Strategic Agenda

- **Inclusive economic growth (IEG):**
  - Pillar 2: Access to economic opportunities, including jobs, made more inclusive
- **Environmentally sustainable growth (ESG):**
  - Global and regional transboundary environmental concerns
  - Natural resources conservation

### 4. Drivers of Change

- **Governance and capacity development (GCD):**
- **Knowledge solutions (KNS):**
- **Partnerships (PAR):**
  - Bilateral institutions (not client government)
  - Civil society organizations
  - International finance institutions (IFI)

### 5. Poverty and SDG Targeting

<table>
<thead>
<tr>
<th>Geographic Targeting</th>
<th>Household Targeting</th>
<th>SDG Targeting</th>
<th>SDG Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>SDG8, SDG9, SDG12, SDG13</td>
</tr>
</tbody>
</table>

### 6. Risk Categorization:

- Complex

### 7. Safeguards Categorization [Tranche 1]

- Environment: B
- Involuntary Resettlement: C
- Indigenous Peoples: C

### 8. Financing

<table>
<thead>
<tr>
<th>Modality and Sources</th>
<th>Indicative Tranches ($million)</th>
<th>Amount ($million)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADB</strong></td>
<td></td>
<td>680.00</td>
</tr>
<tr>
<td>Sovereign MFF-Tranche (Concessional Loan): Ordinary capital resources</td>
<td>30.00 40.00 0.00</td>
<td>70.00</td>
</tr>
<tr>
<td>Sovereign MFF-Tranche (Regular Loan): Ordinary capital resources</td>
<td>272.00 191.00 147.00</td>
<td>610.00</td>
</tr>
<tr>
<td><strong>Cofinancing</strong></td>
<td></td>
<td>186.50</td>
</tr>
<tr>
<td>Government of Australia - Grant</td>
<td>11.50 0.00 0.00</td>
<td>11.50</td>
</tr>
<tr>
<td>To be determined - Loan</td>
<td>0.00 115.00 60.00</td>
<td>175.00</td>
</tr>
<tr>
<td><strong>Counterpart</strong></td>
<td></td>
<td>148.50</td>
</tr>
<tr>
<td>Government</td>
<td>44.00 49.00 55.50</td>
<td>148.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>357.50 395.00 262.50</td>
</tr>
</tbody>
</table>


10. Investment Program Summary

The Highlands region of Papua New Guinea (PNG) consists of seven landlocked provinces where approximately 40% of the country's population resides, most of whom are involved in rural smallholder agricultural production. Aside from abundant and underemployed labor resources, the region is endowed with agricultural and mineral resources which serve as an engine of growth for the national economy. Characterized by relative high levels of the national agricultural production of fresh produce and cash crops, mainly coffee, tea, and cocoa, the region contributes a third of gross domestic product; while the region’s mineral and petroleum resources account for nearly 80% of national exports. The 1,200 km long 2-lane national Highlands Highway is the lifeline for the Highlands region connecting 1,800 km of regional and feeder roads and servicing the region's people particularly those in the rural hinterland. The highway traverses the Highlands region connecting it to the coastal provinces and the country's main port in Lae.

**Impact:** Attainment of well-integrated, safe, affordable, and financially and environmentally sustainable transport systems that efficiently serve the economy and people of PNG (National Transport Strategy, 2014-2030)

Improved access to health and education, and living standards of the people of PNG (National Strategy for Responsible Sustainable Development for Papua New Guinea)

Increased opportunity for equality and prosperity in rural areas (Development Strategic Plan, 2010-2030)

**Outcome:** Increased efficiency and safe movement of people, goods, and services between the Highlands Region and markets

**Outputs:**
(i) The 430 kilometer of two-lane rural Highlands Highway from Lae Nadzab airport to Kagamuga airport in Mt Hagen, is rehabilitated, upgraded, and effectively maintained,
(ii) Road safety on the national Highlands Highway increased,
(iii) Transport logistics and services in the Highlands Region improved, and
(iv) Institutional capacity of the DOW to deliver the investment program and sustain its benefits strengthened

**Implementation Arrangements:** Department of Works will be the executing agency.

**Project Readiness:** This proposed investment program has the potential to diversify the nation’s economy and have a transformational impact on PNG. The Highlands Highway is a top priority national road of the government's Development Strategic Plan (2010-2030), and similarly it was also identified as a priority investment in the National Transport Strategy 2014-2030 (NTS), the government's roadmap for development in the transport sector which proposes a safe, integrated transport network that ensures domestic and international connectivity by moving people and goods reliably at low cost. The investment program is aligned with ADB's Country Partnership Strategy, 2016-2020 and the Country Operations Business Plan 2017-2019 for PNG, which aims at reducing transport and logistical costs to support sustainable development and inclusive growth. In addition to being aligned with the government's strategies and priorities, the proposed investment program is highly complementary to ongoing efforts of ADB and other development partners in the sector. Currently, ADB's ongoing MFF for Highlands Region Road Improvement Investment Program (HRRIP) is rehabilitating regional roads connected to the Highlands Highway. Road maintenance is supported by Government of Australia and the World Bank, specifically in the coastal areas. For a coordinated and well-guided approach for the Highlands Highway among government agencies and development partners, a high level Program Steering Committee, including a core working group (CWG), was established in 2015.

11. Milestones

<table>
<thead>
<tr>
<th>Modality</th>
<th>Estimated Approval</th>
<th>Estimated Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multitranche financing facility</td>
<td>22 June 2017</td>
<td>21 June 2027</td>
</tr>
<tr>
<td>Tranche I</td>
<td>31 July 2017</td>
<td>31 December 2021</td>
</tr>
<tr>
<td>Tranche II</td>
<td>30 June 2019</td>
<td>31 December 2024</td>
</tr>
<tr>
<td>Tranche III</td>
<td>30 June 2021</td>
<td>21 June 2027</td>
</tr>
</tbody>
</table>

12. Project Data Sheet (PDS)

PDS [1]

http://www.adb.org/projects/48444-002/main

---

* Multitranche Financing Facility (MFF).
* For MFF, this refers to the end of the availability period; for tranches, this refers to the tranche closing date.
* Safeguard documents can be viewed by clicking the Document's hyperlink in the Project Data Sheet (PDS) page.
I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed multitranche financing facility (MFF) to Papua New Guinea (PNG) for the Sustainable Highlands Highway Investment Program.¹

2. The investment program will improve the sustainability of the Highlands Highway, the nation’s most strategic national road that traverses 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.

II. THE INVESTMENT PROGRAM

A. Rationale

3. The Highlands Region consists of seven landlocked provinces that are home to about 40% of the country’s population, most of whom are involved in rural smallholder agriculture. With relatively high production levels of fresh produce and cash crops—mainly coffee, tea, and cocoa—the region contributes one-third of PNG’s gross domestic product, which was estimated at approximately $17 billion for 2014. Additionally, the region has rich mineral and petroleum resources, which account for nearly 80% of PNG’s national exports. Better transport infrastructure resulting from the investment program is expected to improve access to markets and services, and unlock the Highlands Region’s vast economic development potential.

4. The 1,200-km-long, two-lane national Highlands Highway is the lifeline for the Highlands Region, connecting 1,800 km of regional and feeder roads and servicing the regions estimated 3 million people in the rural hinterland. It connects landlocked mountainous provinces to the coastal province of Morobe and the Lae maritime port. Lae port is PNG’s largest, busiest, and single most important sea port, serving as the nation’s international gateway and a regional transshipment hub for the eastern reaches of the South Pacific.

5. Despite its importance to the region and the country, the Highlands Highway is in worse condition than the overall national sealed road network. Nearly all sections of the Highlands Highway are in poor condition, primarily because the government lacks the capacity to plan and execute maintenance works. Although about 70% of the alignment is in fair maintainable condition, most of these road sections demand immediate and significant repairs.² Vast stretches of the road require emergency works, significant rehabilitation, upgrades, and periodic and routine maintenance.

6. Because of the mountainous terrain and inadequate engineering design for PNG’s climatic conditions, washouts and landslides are common during the rainy season and make the Highlands Highway impassable at times. Climate change is expected to increase the frequency of extreme rain events. Road safety is poor, and the safety rating for vehicle occupants and

¹ The design and monitoring framework for the investment program is in Appendix 1.
² Sector Assessment (Summary): Transport (accessible from the list of linked documents in Appendix 2).
pedestrians is 2-star and below. In its current state, the road conditions pose serious safety hazards to users and pedestrians, with levels of fatalities and injuries far exceeding those in developed countries in Asia and the Pacific.

7. The poor condition of the Highlands Highway and the resulting inadequacy of transport services have made the region’s agricultural products costly, limiting their competitiveness in domestic and international markets. The absence of agricultural logistics facilities further restricts the development of value chains for perishable and high-value products. Thus, given 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.

8. **Strategic context, policy framework, and sector road map.** This investment program is expected to have a transformational impact on PNG. Ensuring safe and efficient transport along the Highlands Highway is a top government priority under PNG’s Development Strategic Plan, 2010–2030 and the National Transport Strategy, 2014–2030 (NTS). The strategic emphasis is on developing a safe and integrated transport network that ensures domestic and international connectivity, and moving people and goods reliably at low cost. Additionally, the government’s policy framework as stipulated in the medium-term development plan (MTDP) for 2016–2017 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.

9. PNG’s long-term road investment plan up to 2030 requires more than $17 billion for capital investment and maintenance, as per the NTS and associated MTDPs with an estimated financing gap of $10 billion indicating a significant demand for external financial assistance. Through both the planned physical interventions and sector reforms, the investment program will assist in reducing the funding gap in PNG’s road investment plan. Table 1 summarizes the estimated cost of PNG’s long-term investment plan for road network development and maintenance.

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount ($ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road network development</td>
<td>13.55</td>
</tr>
<tr>
<td>Road network maintenance</td>
<td>4.30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17.85</strong></td>
</tr>
</tbody>
</table>

Source: Asian Development Bank estimates based on the NTS.

10. The Development Strategic Plan, NTS, and MTDP identify the Highlands Highway as the top priority economic corridor because it is the nation’s transport infrastructure backbone that links to many other economic corridors. The region’s economic corridors, consisting of interprovincial

---

3 Road Assessment Services Limited. 2015. *Highlands Highway: iRAP Papua New Guinea—Technical Report*. London. The report used star ratings on a scale of 1 to 5, with 1 star being the worst and 5 stars the best. The safety rating is based on a detailed risk assessment considering road attributes every 100 meters. The rating provides a simple objective measure of road safety risk.

4 Estimated deaths per 10,000 vehicles is about 150, which is extremely high compared with the rate in developed countries, which is about 2–5 deaths per 10,000 vehicles.


highways, the feeder road network, ports and airports, support the integrated development of agriculture, forestry, mining, industry, and power generation along major interprovincial highways, linking ports, airports, and the lower-level feeder road network. The combined economic impact of this integrated development is expected to be greater than its parts. The MTDP also places significant importance on maintenance and rehabilitation. A maintenance sustainability analysis focused on national roads has identified the existing gaps in planning, financing, and institutional responsibilities. The investment program responds to these gaps through a long-term plan to rehabilitate, upgrade and maintain about 430 km of the Highlands Highway and develop sustainable economic corridors, consistent with the goals of the NTS and MTDP.

11. **ADB’s past investments, capacity development, and governance.** In 2007, the Asian Development Bank (ADB) provided project loans to expand the capacity of the port facilities at Lae. These works are now complete and options for port operations are being developed. In 2008, ADB approved an MFF for the Highlands Region Road Improvement Investment Program (HRRIIIP) to rehabilitate and improve priority sections of the core road network in the Highlands Region. To date, this MFF is rated as “on track”, having improved 343 km of the core feeder road network that are connected to the Highlands Highway. In 2009, ADB approved an MFF for the Civil Aviation Development Investment Program (CADIP), which includes the rehabilitation and upgrade of the airports at Mt. Hagen and Goroka, two key population centers along the Highlands Highway. The scheduled completion of these three major infrastructure programs reinforces the government’s designation of the Highland Highway as a top development priority, which will also complete the rehabilitation of PNG’s northern transport network.

12. In view of the long-term nature of institutional change and the need to have continuing engagement, the investment program carries forward the soft (i.e., nonphysical) infrastructure agenda being implemented under the existing HRRIIIP. Under the HRRIIIP, nonphysical outputs are included to support capacity development, improve policy frameworks, and strengthen governance of PNG government agencies involved in the road subsector. They include preparing a new national transport development plan, increasing road user charges, establishing performance-based maintenance contracts, developing the capacity of the National Road Authority (NRA), and increasing the focus on road safety. In July 2013, the government finalized the NTS, which presents a strategic policy framework for the road subsector, anchored on clear principles for capital investment, maintenance, institutional change, and reform. The NTS also outlines the need for better planning and oversight, cost recovery, and adherence to best practices on procurement, safety, construction standards, traffic management, gender considerations, and improved governance. The NTS recognizes better budgeting, financial management, monitoring, evaluation, and training as essential for strengthening institutional effectiveness.

---

7 Maintenance Sustainability Analysis (accessible from the list of linked documents in Appendix 2).
8 The investment program road is the 430 km section of the Highlands Highway from Lae Nadzab airport to Kagamuga airport, comprising of the 57 km Chimbu crossing, which requires full major rehabilitation, and the remaining 373 km requiring restoration, upgrade, and maintenance.
13. The government has initiated several road subsector reforms to improve governance, although further efforts are needed to ensure that such initiatives gain broader and deeper traction. On road maintenance financing, the government introduced road user charges through a fuel tax and computerized vehicle registration fees, driver licensing fees, and mandatory insurance programs, yet revenues are not being properly allocated for road maintenance works and the collective road user charges remain insufficient to provide full coverage of national road network maintenance costs. On road maintenance contracting, the government introduced 5-year performance-based maintenance contracts for the two roads completed under the first tranche of the ongoing HRRIIP. The NRA was authorized by the government to manage these long-term performance-based maintenance contracts, but clear delineation of maintenance responsibility between the NRA and the Department of Works (DOW) remains an issue, as does sufficient funding for the NRA’s current mandate. On road safety, Road Assessment Services Limited completed a comprehensive road safety study on the Highlands Highway in 2015 (footnote 6), and the staff and programs under the National Road Safety Council were centralized under the Road Transport Authority in early 2017.

14. The investment program responds to the need to address institutional capacities and governance risks in the areas of (i) project management and contract administration, (ii) financial management, and (iii) procurement. Through dialogue with PNG’s central and sector agencies as well as other participating partners, the governance concerns and corresponding measures to address them are incorporated in the design and implementation of the investment program.\textsuperscript{13}

15. **New multitranche financing facility and ADB value addition.** The investment program requires an overall investment of about $1 billion. The government has requested ADB to provide a new MFF to rehabilitate, upgrade, and maintain the Highlands Highway through 2027. The MFF is consistent with the government’s strategic development priorities and includes policies and reforms to strengthen institutional capacity and performance of the transport sector. The program is designed to be implemented through three tranches over a ten-year period. Detailed designs are fully completed for the first tranche and initial due diligence is under way for the remaining two tranches, but final designs will be prepared during MFF implementation.

16. The investment program is included in ADB’s country partnership strategy, 2016–2020 and country operations business plan, 2017–2019 for PNG, both of which indicate the importance of reducing transport and logistics costs to support sustainable development and inclusive growth.\textsuperscript{14} With the road subsector accounting for 90% of government expenditures on infrastructure, the investment program provides an opportunity to increase resources and institutional capacities for more effective and sustainable road maintenance planning and implementation in the Highlands Region. As such, the use of the ADB-financed MFF represents significant value added for the government’s investment in the road subsector.

17. The MFF is the most suitable funding modality. Firstly, it offers predicable financing over a long-term implementation period. It also offers the flexibility and ability to sequence investments, which is especially valuable given the fragile and conflict-affected situations in PNG. Collectively, these design features of the MFF assist the budget programming of the government’s counterpart funds. Secondly, the MFF supports sustained engagement and policy dialogue on implementing

\textsuperscript{13} For example, aside from following ADB standards on procurement, financial management, and reporting, the negotiated and signed project agreement documents stipulate that the DOW will provide sufficient counterpart staff to work with and learn from the international consultants of the program management office and will develop an operations and maintenance plan.

the NTS, including sector governance reforms and maintenance financing. Thirdly, it presents an opportunity to mobilize significant cofinancing needed for the investment program. Thus, as highlighted in the preceding paragraphs, all the preconditions for the MFF have been established: (i) Road Map (i.e., sector strategy), (ii) strategic context via the Country Partnership Strategy, (iii) policy framework.

18. With the ongoing MFFs for the HRIIP and CADIP, the government, through the executing agencies, continues to develop a good record on MFF implementation in the transport sector. The experience with the ongoing investment programs brings out emerging sector issues that are now incorporated in the design of this new MFF. The most important lessons revolve around new implementation arrangements, including the use of larger contracts, improved contractor and consultant quality gained through higher bidding standards and specifications, and regular ADB team involvement led by its significant resources deployed in the field through the PNG Resident Mission.

B. Impacts and Outcome

19. The investment program responds to the government’s national development and transport strategies for promoting inclusive and sustainable development of the Highlands Region. The impacts are aligned with (i) increased opportunity for equality and prosperity in rural areas; (ii) attainment of well-integrated, safe, affordable, and financially and environmentally sustainable transport systems; and (iii) improved access to health and education, and improved living standards of the people of PNG.15 The outcome will be increased efficiency and safe movement of people, goods, and services between the Highlands Region and markets.

C. Outputs

20. The investment program outputs will be (i) about 430 km of the two-lane national Highlands Highway from Lae Nadzab Airport to Kagamuga Airport rehabilitated, upgraded, and effectively maintained; (ii) road safety on the national Highlands Highway increased; (iii) transport logistics and services in the Highlands Region improved; and (iv) institutional capacity of DOW to deliver the investment program and sustain its benefits strengthened.

21. The outputs under tranche 1 will be (i) about 170 km of the two-lane national Highlands Highway from Lae Nadzab Airport to Kagamuga Airport rehabilitated and upgraded, and about 430 km of the Highlands Highway effectively maintained; (ii) road safety on the national Highlands Highway increased; and (iii) institutional capacity of DOW strengthened.

22. Future MFF tranches are well defined and preliminary cost estimates and initial procurement plans are prepared. Aside from continuing rehabilitation and upgrade of prioritized sections of the Highlands Highway and ensuring that the restored assets are properly maintained, tranche 2 will focus on upgrading or reconstructing 29 one-lane and 40 two-lane bridges. Tranche 3 will (i) rehabilitate and upgrade roads around Goroka, construct a new bypass road to accommodate heavy and through traffic, and provide truck climbing lanes along steep gradients; (ii) construct two logistics platforms—in Goroka and in Jiwaka provinces—for the trade and

transport of fresh produce to domestic and regional markets; and (iii) establish two weighbridge stations—in Goroka and in Jiwaka provinces—to control truck overloading.¹⁶

D. Investment and Financing Plans

23. Investment plan. The investment program is estimated to cost $1,015 million equivalent, including taxes and duties, physical and price contingencies, interest and other charges during implementation (Table 2).

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Base Cost&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>1. Highlands Highway rehabilitation, upgrading, and maintenance</td>
<td>718.8</td>
</tr>
<tr>
<td>2. Road safety improvements</td>
<td>46.9</td>
</tr>
<tr>
<td>3. Transport logistics and services</td>
<td>8.6</td>
</tr>
<tr>
<td>4. Institutional strengthening and management</td>
<td>68.8</td>
</tr>
<tr>
<td>Subtotal (A)</td>
<td>843.1</td>
</tr>
<tr>
<td>B. Contingencies&lt;sup&gt;c&lt;/sup&gt;</td>
<td>126.3</td>
</tr>
<tr>
<td>C. Financing Charges During Implementation&lt;sup&gt;d&lt;/sup&gt;</td>
<td>45.6</td>
</tr>
<tr>
<td>Total (A+B+C)</td>
<td>1,015.0</td>
</tr>
</tbody>
</table>

Note: Numbers may not sum precisely because of rounding.

<sup>a</sup> Includes taxes and duties of about $76 million to be financed from ADB and cofinancier resources. Such amount does not represent an excessive share of the project cost.

<sup>b</sup> Prices as at 1 March 2017.

<sup>c</sup> Physical contingencies for works are computed at 10.0%, while price contingencies are computed at 6.5%, reflecting historic trades in domestic and international inflation.

<sup>d</sup> Includes interest and commitment charges. Interest during construction for the OCR loan, in concessional terms, has been computed at 2.0% per year. Interest during construction for the OCR loan, in regular terms, has been computed at the 5-year United States dollar fixed-swap rate plus a spread of 0.5% and a maturity premium of 0.1%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

24. Financing plan. The investment program will be financed from the following sources: (i) up to $610.0 million regular loans from ADB’s ordinary capital resources (OCR), (ii) up to $70.0 million concessional loans from ADB’s OCR, (iii) about $186.5 million in cofinancing,¹⁷ and (iv) about $148.5 million in government contribution (Table 3). For tranche 1, the Government of Australia has committed an $11.5 million grant to be administered by ADB. Although still evolving, significant cofinancing is expected for future tranches. Financing under the MFF will cover taxes and duties.¹⁸

25. The government has requested an MFF of (i) up to $610 million regular loans from ADB’s OCR; and (ii) up to $70.0 million concessional loans from ADB’s OCR to finance part of the

¹⁶ To achieve economies of scale, value for money, and effectiveness, each major civil works package includes rehabilitation, upgrades, and maintenance. All three types of work have been planned and prioritized based on an engineering assessment of the entire length of the Highlands Highway and what is needed to restore and maintain it starting from the first tranche. For example, one section of the road may need urgent rehabilitation to restore it to good condition, while another may need maintenance to prevent deterioration. Both works will be done simultaneously to gradually restore and maintain the entire Highlands Highway to good condition.

¹⁷ ADB-administered cofinancing will be approved by ADB Management consistent with Enhancing Operational Efficiency of the Asian Development Bank. Manila.

investment program. The MFF will consist of three tranches, subject to the government’s submission of related periodic financing requests, execution of related loan agreements for each tranche, and fulfillment of the terms and conditions and undertakings set forth in the framework financing agreement.

26. The first tranche of the MFF will be partially financed by an OCR regular loan of $272 million, an OCR concessional loan of $30 million and a grant of $11.5 million from the Government of Australia to be administered by ADB. 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 (the interest and other charges during construction to be capitalized in the loan); and such other terms and conditions set forth in the draft loan agreement. Based on the government’s choice of the straight-line repayment option, the average maturity is 15.25 years, and the maturity premium payable to ADB is 0.2% 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); and such other terms and conditions set forth in the draft loan agreement.

Table 3: Financing Plan for the Investment Program

<table>
<thead>
<tr>
<th>Source</th>
<th>Tranche 1 ($ million)</th>
<th>Tranche 2 ($ million)</th>
<th>Tranche 3 ($ million)</th>
<th>Amount ($ million)</th>
<th>Share of Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Development Bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordinary capital resources (regular loans)</td>
<td>272.0</td>
<td>191.0</td>
<td>147.0</td>
<td>610.0</td>
<td>60%</td>
</tr>
<tr>
<td>Ordinary capital resources (concessional loans)</td>
<td>30.0</td>
<td>40.0</td>
<td>0.0</td>
<td>70.0</td>
<td>7%</td>
</tr>
<tr>
<td>Government of Australia</td>
<td>11.5</td>
<td>0.0</td>
<td>0.0</td>
<td>11.5</td>
<td>1%</td>
</tr>
<tr>
<td>Other Development Partners</td>
<td>0.0</td>
<td>115.0</td>
<td>60.0</td>
<td>175.0</td>
<td>17%</td>
</tr>
<tr>
<td>Government</td>
<td>44.0</td>
<td>49.0</td>
<td>55.5</td>
<td>148.5</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>357.5</td>
<td>395.0</td>
<td>262.5</td>
<td>1,015.0</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Asian Development Bank estimates.

E. Implementation Arrangements

27. The DOW will be the executing agency for the investment program. Based on lessons learned regarding implementation under HRRIP’s existing project implementation units (PIUs), PMO will be established to administer the investment program. The PMO will be larger than the HRRIP PIUs and, as a single PMO for the duration of the MFF, it is designed to promote consistency, uniformity, and continuity across the entire investment program; the PMO will also build the capacity of DOW through knowledge transfer and promote on-the-job learning by doing. The organizational structure and staffing complement of the PMO directly responds to DOW’s capacity gaps in procurement, and financial management in addition to strengthening project management and administration functions.

28. The DOW will outsource project management and contract administration to the private sector via construction supervision consultants and international specialists employed by the PMO. The underlying premise is that the quality of implementation depends largely on the quality of the contractors and consultants. DOW outlined terms of reference for independent construction supervision with emphasis on in-house qualified staff for core jobs, quality, and timely reporting.
An organizational structure for the PMO has been prepared, including interface channels with the DOW and specific terms of reference for all positions. In coordination and consultation with the DOW, the construction supervision and PMO consultants will be required to clear design proposals and payment requests against agreed contract schedules. All contracts will be subject to audits by independent external consultants.

29. All procurement will be undertaken in accordance with ADB’s Procurement Guidelines (2015, as amended from time to time). Consultants will be recruited following ADB’s Guidelines on the Use of Consultants (2013, as amended from time to time). As tranche 1 will be jointly financed by ADB and the Government of Australia through its Department of Foreign Affairs and Trade, universal procurement will be applied to works, goods, and consulting services to be financed under tranche 1.19

30. ADB has taken specific actions to mitigate risks and ensure the efficient implementation of future works under the investment program during project preparation and design. The investment program is at a high state of project readiness based on completed and ongoing due diligence of all sections of the 430 km Highlands Highway. For tranche 1, DOW has prepared bidding documents and associated designs and bills of quantities using ADB standard bidding documents for large works. The use of large contract packages is preferred to promote international competition and reduce procurement delays from numerous smaller packages.

31. The implementation arrangements are summarized in Table 4 and described in detail in the facility administration manual.20

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation period</td>
<td>1 July 2017–21 June 2027</td>
</tr>
<tr>
<td>Estimated completion date</td>
<td>31 December 2021 (first tranche); the first tranche will close on 30 June 2022, while the MFF will close on 21 June 2027</td>
</tr>
<tr>
<td>(i) Oversight bodies</td>
<td>Program Steering Committee: Chief secretary (chair), DTR secretary, DNPM secretary, DOT secretary; Secretary: Provincial administrators from Morobe, Eastern Highlands, Chimbu, Jiwaka, and Western Highlands provinces.</td>
</tr>
<tr>
<td>(ii) Executing agency</td>
<td>DOW</td>
</tr>
<tr>
<td>(iii) Key implementing agencies</td>
<td>DOW, NRA, DOT, NRSC (RTA)</td>
</tr>
<tr>
<td>(iv) Implementation unit</td>
<td>PMO-DOW in Goroka, 30 staff</td>
</tr>
<tr>
<td>Procurement</td>
<td>International competitive bidding</td>
</tr>
<tr>
<td></td>
<td>National competitive bidding</td>
</tr>
<tr>
<td></td>
<td>12 contracts</td>
</tr>
<tr>
<td></td>
<td>1 contract</td>
</tr>
<tr>
<td></td>
<td>$669 million</td>
</tr>
<tr>
<td></td>
<td>$2 million</td>
</tr>
<tr>
<td>Consulting services</td>
<td>Construction supervision contracts (11), studies contracts (2), DOW capacity building and implementation support (3), and Road Safety Community support (3)</td>
</tr>
<tr>
<td></td>
<td>1,700 person-months</td>
</tr>
<tr>
<td></td>
<td>700 person-months</td>
</tr>
<tr>
<td></td>
<td>$54 million</td>
</tr>
<tr>
<td></td>
<td>$15 million</td>
</tr>
<tr>
<td></td>
<td>1,200 person-months</td>
</tr>
<tr>
<td></td>
<td>280 person-months</td>
</tr>
<tr>
<td></td>
<td>$18.5 million</td>
</tr>
<tr>
<td></td>
<td>$1.4 million</td>
</tr>
<tr>
<td>Retroactive financing and/or advance contracting</td>
<td>Advance action for procurement of civil works and recruitment of consultants will be applied. Retroactive financing may be applied, contingent on demands and project readiness.</td>
</tr>
<tr>
<td>Disbursement</td>
<td>The loan proceeds will be disbursed following ADB’s Loan Disbursement Handbook (2015, as amended from time to time) and detailed arrangements agreed between the government and ADB. ADB will fully administer grant cofinancing from the Government of Australia.</td>
</tr>
</tbody>
</table>

ADB = Asian Development Bank, DNPM = Department of National Planning and Monitoring, DOT = Department of Transport, DOW = Department of Works, DTR = Department of Treasury, MFF = multitranche financing facility, NRA =

20 Facility Administration Manual (accessible from the list of linked documents in Appendix 2).
Aspects | Arrangements
--- | ---
National Road Authority, NRSC = National Road Safety Council, PMO = program management office, RTA = Road Traffic Authority.

a Procurement will be carried out following ADB Procurement Guidelines (2015, as amended from time to time).
b Selection of consultants will follow ADB Guidelines on the Use of Consultants (2013, as amended from time to time).
Source: Asian Development Bank estimates.

III. DUE DILIGENCE

A. Technical

32. The technical viability of the proposed works under the investment program was confirmed during program preparation. The preliminary design of works, bills of quantity, and associated bidding documents under tranche 1 were prepared including road maintenance, reconstruction, and upgrading; and road safety measures.

B. Economic and Financial

33. The investment program yields an economic rate of return of 16.4% and the first tranche yields 14.6% demonstrating their economic viability. The economic analysis is conservative, focusing on the direct benefits generated from savings in vehicle operating costs and travel time costs. Based on the two-lane road design, the unit costs for periodic and routine maintenance of the Highlands Highway over the project life cycle are manageable. The financial sustainability analysis demonstrates that the government has sufficient resources to meet the maintenance needs of the Highlands Highway in the future (footnote 10), provided it follows best practices in asset management as articulated in the policy framework and priorities of the NTS.

C. Governance

34. ADB’s Anticorruption Policy (1998, as amended to date) was explained to, and discussed with, the government and the DOW. The specific policy requirements and supplementary measures are described in the facility administration manual. ADB found the government’s policies and procedures on financial management, procurement, anticorruption, and other institutional issues and mechanisms to be satisfactory, albeit with substantial risks requiring mitigation measures. All bidding documents for contracts under the investment program will include provisions specifying ADB’s right to audit records and accounts related to the MFF, as well as those of all contractors, suppliers, consultants, and other service providers as they relate to the MFF. The DOW and the Department of Treasury will take additional measures to strengthen governance, accountability, and transparency under the MFF, primarily with direct payment procedures. Key measures are (i) external auditing of contracts, project accounts, and financial statements; (ii) PMO assistance in the drafting and evaluation of procurement documents; (iii) public disclosure on all procurement matters; and (iv) verification of contractors’ payment claims by supervision consultants following clearly defined contract specifications.

21 ADB’s Office of Anticorruption and Integrity conducted three project procurement-related reviews in PNG of projects implemented by the DOW: (i) the Road Maintenance and Upgrading (Sector) Project, published in 2016; (ii) the Bridge Replacement for Improved Rural Access Sector Project, to be published in 2017; and (iii) the Highlands Region Road Improvement Investment Program, projects 1 and 2, to be published in 2017. ADB’s Pacific Department, in collaboration with the DOW, is continuously working with the Office of Anticorruption and Integrity to address the key findings from these reviews. The ADB project team carefully considered these lessons when it prepared this report and recommendation of the President.
The transport assessment identified governance weaknesses related to the financial sustainability of road infrastructure investments because of inadequate planning, budgetary allocations, and execution of maintenance works. The investment program will address these issues through long-term institutional strengthening and capacity building. International expertise provided by the PMO will course sector reforms through government channels and guide the DOW through the application of international best practices as modified to the PNG context through the investment program.

An institutional analysis and development plan was completed as part of the due diligence for the investment program. Lessons learned from the ongoing road investment program identified capacity gaps in the functionality of the DOW, the NRA, and the PIUs. ADB specifically designed a PMO to support the DOW in addressing these gaps to effectively administer the investment program from beginning to end, deliver the core outputs, strengthen project management capacities of the involved agencies, and promote required reforms for improved sector governance. By the end of the 10-year investment program, DOW staff will be trained to assume all necessary program implementation roles of the PMO.

D. Poverty and Social

The investment program is classified as a general intervention that will generate indirect poverty reduction impacts. Road users will benefit from shorter travel times and lower vehicle operating costs. Expanded access to improved roads will help drive the shift from subsistence to market-based agriculture, allowing farmers to grow commercial products that can be shipped to markets more quickly. Farmers may also diversify, cultivate high-value crops, and grow larger marketable surpluses to improve their income-earning capacity. Connectivity will create more opportunities for about 3 million people living in the Highlands Region and their businesses, and widen access to social services.

The gender action plan includes targeted activities to maximize benefits for communities and women along the investment program road. Specifically designed physical and nonphysical interventions under the investment program include road safety improvements and awareness, dedicated female washing facilities and toilets, and roadside markets. The investment program also sets minimum thresholds for women’s participation and employment during construction. 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

The impacts of tranche 1 on the environment, involuntary resettlement, and indigenous peoples have been assessed in accordance with ADB’s Safeguard Policy Statement (2009). The DOW has prepared the required safeguards documents and mitigation measures in compliance with ADB procedures and requirements for consultation and disclosure to the public. The government has further illustrated its collective institutional capacity and commitment by agreeing to the institutional development plan, showing willingness to undertake an action plan to resolve any legacy land acquisition issues, and setting aside the funds required for land acquisition.

---

22 Institutional Analysis and Development Plan (accessible from the list of linked documents in Appendix 2).
23 Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2).
40. The DOW prepared an environmental assessment and review framework, which sets out a framework for screening, categorization, impact assessment, management, and monitoring for the investment program. Works under tranche 1 are unlikely to result in significant adverse environmental impact, and any potential temporary impacts during construction such as noise, emissions, or waste generation can be adequately monitored and mitigated. Therefore, tranche 1 is classified as category B for the environment. The DOW included an environmental management and monitoring plan in the initial environmental examination it prepared for tranche 1.

41. The DOW prepared a land acquisition and resettlement framework for the investment program, and undertook due diligence for land acquisition and resettlement impacts for the proposed works financed under tranche 1. Given that all the proposed works and other activities are within the existing road alignment, the interventions are classified as category C for involuntary resettlement. No person who can be defined as indigenous is in the project areas. As such, the indigenous peoples' classification is category C, and indigenous peoples safeguard measures are not required.

F. Risks and Mitigating Measures

42. The overall risk is substantial, but manageable through the application of mitigating measures. Integrated benefits and impacts are expected to outweigh costs. Major risks and mitigating measures are described in detail in the risk assessment and risk management plan. The main risks include (i) macroeconomic, (ii) sustainability and reforms, (iii) weak public financial management, (iv) a lack of transparency in procurement, and (v) implementation delays associated with project readiness and procurement. The security of personnel and equipment is also a risk that will be mitigated by constantly having close consultations with communities along the road alignment and employing significant levels of local labor from these communities in the construction and maintenance works.

<table>
<thead>
<tr>
<th>Risks</th>
<th>Risk Assessment</th>
<th>Mitigating Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macroeconomic</td>
<td>High</td>
<td>Continuous monitoring of macroeconomic conditions; assessment of impacts of external shocks, particularly with respect to commodity prices; and coordination with other development partners will be undertaken.</td>
</tr>
<tr>
<td>Sustainability and reforms</td>
<td>Substantial</td>
<td>As per the investment program design and associated covenants, adequate future funding will be set aside for maintenance. Planning will be improved, as well as budgeting, financial management, monitoring, evaluation, and reporting. Institutional and sector governance reforms will be accelerated through the PMO, and associated training provided under the investment program will clarify mandates and responsibilities leading to greater institutional effectiveness. The civil works contracts and concessions will include performance-based maintenance for an initial period of 5 years.</td>
</tr>
<tr>
<td>Weak public financial management</td>
<td>Substantial</td>
<td>A financial management assessment has been undertaken. The skills of DOW finance and accounting staff in regional and provincial offices will be upgraded through rigorous training. Regular coordination meetings will be conducted between DOW regional and provincial staff to identify problems early and avoid delays in the preparation of reports. DOW will hasten the implementation of the IFMS to include all regional and provincial offices and have a single unified financial management system.</td>
</tr>
<tr>
<td>Lack of transparency in procurement</td>
<td>Substantial</td>
<td>Through websites and published notices the government will provide and disclose (i) updated and detailed information on project implementation; (ii) information on selection of consultants and contractors; (iii) independent verification of the quantity, quality, and cost of works; and (iv) expected service levels from performance-based contracts.</td>
</tr>
</tbody>
</table>

---

24 Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).
Implementation delays associated with project readiness and procurement may be caused by a lack of project readiness and the procurement process. Project readiness will be increased by preparing detailed designs in advance of procurement; safeguards plans; procurement of goods, works, and services; funding for land acquisition; and all internal approvals before ADB approves new tranches. Readiness will eliminate or reduce delays.

ADB = Asian Development Bank, DOW = Department of Works, IFMS = integrated financial management system, PMO = program management office.
Sources: Asian Development Bank and Department of Works of Papua New Guinea.

IV. ASSURANCES

43. The government and DOW have assured ADB that implementation of the investment program shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as detailed in the facility administration manual and loan documents.

44. The government has given ADB certain undertakings for the MFF, which are set forth in the framework financing agreement. Specific covenants agreed to by the government and the DOW with respect to individual tranches under the MFF are set forth in the loan agreements for the respective tranches.

V. RECOMMENDATION

45. I am satisfied that the proposed multitranche financing facility would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the multitranche financing facility to Papua New Guinea for the Sustainable Highlands Highway Investment Program in an aggregate principal amount not exceeding the equivalent of $866,500,000, which comprises

(i) the provision of loans from ADB’s ordinary capital resources, in regular terms, with interest and other terms to be determined in accordance with ADB’s London interbank offered rate (LIBOR)-based lending facility;
(ii) the provision of loans from ADB’s ordinary capital resources, in concessional terms, with interest and other terms to be determined in accordance with ADB’s applicable policies relating to ordinary capital resources; and
(iii) ADB-administered cofinancing as set forth in paragraph 24;

and is subject to such other terms and conditions as are substantially in accordance with those set forth in the framework financing agreement presented to the Board.

Takehiko Nakao
President
1 June 2017
## DESIGN AND MONITORING FRAMEWORK FOR THE INVESTMENT PROGRAM

### Impacts the Investment Program is Aligned with

- Increased opportunity for equality and prosperity in rural areas (Development Strategic Plan, 2010–2030)<sup>a</sup>
- Attainment of well-integrated, safe, affordable, and financially and environmentally sustainable transport systems that efficiently serve the economy and people of PNG (National Transport Strategy, 2014–2030)<sup>b</sup>
- Improved access to health and education, and living standards of the people of PNG (National Strategy for Responsible Sustainable Development for Papua New Guinea)<sup>c</sup>

### Results Chain

<table>
<thead>
<tr>
<th>Performance Indicators with Targets and Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Risks</th>
</tr>
</thead>
</table>
| Outcome Increased efficiency and safe movement of people, goods, and services between the Highlands Region and markets | By 2028  
  a. Travel time from Lae Nadzab airport to Kagamuga airport reduced by 30% (2015 baseline: 10 hours)  
  b. Annual number of road closures greater than 48 hours due to climate events reduced to 2.0 (2016 baseline: 5.0 closures)  
  c. At least 50% of highlands highways improved to 3-star safety rating or better for both vehicle occupants and pedestrians: (2015 baseline: 4% for vehicle occupants and 2% for pedestrians)  
  d. Road fatalities in project highway reduced by 50% (2016 average baseline: 0.38 fatalities per km)  
  e. At least 50% of farmers participating in fresh produce production and marketing through the transport logistics platforms are women (2016 baseline: 0%) | a. DOW annual reports  
  b. DOW annual reports  
  c. DOW iRAP reports (supported by TSSP)  
  d. NRSC annual reports where data is disaggregated by sex and age  
  e. ADB review missions, NARI progress reports that include participation rates, and agribusiness consultant reports | Safety and security situation deteriorates in the project area  
  Macroeconomic factors affect commodity prices and hinder development  
  Insufficient road maintenance financing may jeopardize the sustainability of the large investment in the Highlands Highway, its preservation as an asset. |
| Outputs 1. 430 km of the two-lane national Highlands Highway from Lae Nadzab airport to Kagamuga airport rehabilitated, upgraded, and effectively maintained | By 2027  
  1a. The 57 km-long crossing of Chimbu province entirely rehabilitated and upgraded to good condition and adapted to climate change with IRI < 4.5 (2016 baseline: 0 km in good condition and IRI ≥ 9)  
  1b. 373 km of highway and 68 bridges are restored, upgraded to good condition, and adapted to climate change with IRI < 4.5; (2016 baseline: 0 km and 0 bridges restored and upgraded, IRI ≥ 9)  
  1c. 60 bus stops and bus shelters built (2016 baseline: 0) | 1a–h. Project M&E field reports and annual program progress reports, ADB review missions, and engineer-certified contractor handover certifications | Implementation delays due to procurement |
<table>
<thead>
<tr>
<th>Results Chain</th>
<th>Performance Indicators with Targets and Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1d. 24 roadside market areas upgraded with separate male and female toilets (2016 baseline: 0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1e. $10 million allocated and disbursed for the 430 km highway length annually for maintenance (2016 baseline: $0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1f. 20% of employed construction and community-based maintenance workers are women (2016 baseline: 0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1g. Goroka road bypass (24 km long) designed for climate change adaptation and constructed (2016 baseline: no road bypass)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1h. 20 km of truck climbing lanes constructed in the Kassam Pass and the Daulo Pass along sections where the slope gradient is steeper than 10% (2016 baseline: no truck climbing lane)</td>
<td>By 2027</td>
<td>2a–c. ADB review missions and RTA reports</td>
<td>Road safety furniture and signage is stolen during or after implementation.</td>
</tr>
<tr>
<td>2a. 10 km of footpaths constructed at 10 school locations (2016 baseline: 0 km)</td>
<td>By 2027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b. At least 10,000 residents in seven provincial districts along the Highlands Highway with increased awareness on community road safety, of whom 50% are women (2016 baseline: 0 residents)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2c. Horizontal marking, signage, and crash barriers installed in 24 hazardous locations (2016 baseline: no installations)</td>
<td>By 2027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Two trade and freight logistics platforms constructed (in Goroka and Mt. Hagen) (2016 baseline: 0 platforms)</td>
<td>By 2027</td>
<td>3. ADB review missions, NARI progress reports that include participation rates, and agribusiness consultant reports</td>
<td></td>
</tr>
<tr>
<td>4a. New functional PMO office constructed in Goroka (2016 baseline: no office)</td>
<td>By 2027</td>
<td>4a–c. ADB review missions and program progress reports</td>
<td></td>
</tr>
</tbody>
</table>
### Results Chain

<table>
<thead>
<tr>
<th>Performance Indicators with Targets and Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>program and sustain its benefits strengthened</td>
<td>4b. Institutional development plan for the DOW implemented, training 40 staff in financial management and procurement (2016 baseline: 0 staff trained)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4c. The DOW received funding for climate change adaptation (2016 baseline: no climate change funding)</td>
<td></td>
</tr>
</tbody>
</table>

### Key Activities with Milestones

1. **Highlands Highway from Lae Nadzab airport to Kagamuga airport at Mt. Hagen rehabilitated, upgraded, and effectively maintained**
   1.1 Award, review, and validate design and road safety studies, environmental management plan, and any required involuntary resettlement plan (December 2017)
   1.2 Award and mobilize construction supervision consultants (December 2017)
   1.3 Award civil works contracts (December 2017)

2. **Road safety on the Highlands Highway increased and sustained for pedestrians and vehicle passengers**
   2.1 Prepare road safety action plan (April 2018)
   2.2 Launch road safety awareness programs (May 2018)
   2.3 Ensure identified road safety improvement needs are included in road design and bid documents (March 2017)

3. **Transport logistics and services in the Highlands Region improved to strengthen the agricultural value chain for domestic and international trade**
   3.1 Award, review, and validate logistics platforms design studies (December 2023)
   3.2 Award logistics platforms construction and supervision contracts (April 2024)
   3.3 Examine feasibility and potentially support setting up private operation of logistics platforms (December 2025)

4. **Institutional capacity to deliver the investment program and sustain its benefits strengthened**
   4.1 Strengthen DOW-HRMG to attain annual and program implementation targets (December 2017)
   4.2 Conduct capacity-building activities for procurement, safeguards, and overall road safety; and monitor compliance (December 2017)
   4.3 Install, adequately staff, and make operational two weighbridge stations in Goroka and Hagen; and approve, establish, and implement operating procedures in Goroka, Mt. Hagen, and Lae (December 2025)

### Inputs

| ADB OCR: $680 million ($610 million regular loan and $70 million concessional loan) |
| Government: $148.5 million |
| Other Cofinancers: $186.5 million (loan/grant) |

**ADB** = Asian Development Bank, **DOW** = Department of Works, **HRMG** = Highlands Road Maintenance Group, **iRAP** = International Road Assessment Program, **IRI** = international roughness index, **km** = kilometer, **M&E** = monitoring and evaluation, **NARI** = National Agricultural Research Institute, **OCR** = ordinary capital resources, **PMO** = project management office, **PNG** = Papua New Guinea, **RTA** = Road Traffic Authority, **TSSP** = Transport Sector Support Program.

---


Source: Asian Development Bank

---

David Hill  
Country Director, PNRM
LIST OF LINKED DOCUMENTS
http://www.adb.org/Documents/RRPs/?id=48444-002-3

1. Loan Agreement: Ordinary Operations
2. Grant Agreement: Externally Financed
3. Loan Agreement: Ordinary Operations Concessional
4. Framework Financing Agreement
5. Periodic Financing Request for Tranche 1
6. Sector Assessment (Summary): Transport
7. Facility Administration Manual
8. Contribution to the ADB Results Framework
9. Development Coordination
10. Economic and Financial Analysis
11. Country Economic Indicators
12. Summary Poverty Reduction and Social Strategy
13. Gender Action Plan
14. Initial Environmental Examination
15. Environmental Assessment and Review Framework
16. Due Diligence Report for Tranche 1
17. Resettlement Framework
18. Indigenous Peoples Planning Framework
19. Risk Assessment and Risk Management Plan

Supplementary Documents
20. Transport Sector Road Map and the Investment Program
21. Institutional Analysis and Development Plan
22. Road Safety Analysis and Plan
23. Financial Management Assessment
24. Maintenance Sustainability Analysis
25. Climate Change Vulnerability Assessment
26. Project Procurement Risk Assessment
27. Multitranche Financial Facility Comparison Matrix