



Report and Recommendation of the President to the Board of Directors

Project Number: 43141
October 2009

Proposed Multitranche Financing Facility Papua New Guinea: Civil Aviation Development Investment Program

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 07 October 2009)

Currency Unit	–	kina (K)
K1.00	=	\$0.37
\$1.00	=	K2.66

ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
ANG	–	Air Niugini
APNG	–	Airlines of Papua New Guinea
AusAID	–	Australian Agency for International Development
CAA	–	Civil Aviation Authority
DWTCA	–	Department of Works, Transport and Civil Aviation
EARF	–	environmental assessment review framework
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
FFA	–	financing framework agreement
FIRR	–	financial internal rate of return
HIV/AIDS	–	human immunodeficiency virus/acquired immunodeficiency syndrome
ICAO	–	International Civil Aviation Organization
IEE	–	initial environmental examination
LIR	–	land investigation reports
LIBOR	–	London interbank offered rate
MFF	–	multitranches financing facility
MOA	–	memorandum of agreement
MTDS	–	Medium Term Development Strategy
NTDP	–	National Transport Development Plan
OCR	–	ordinary capital resources
PFR	–	periodic financing request
PIU	–	project implementation unit
PNG	–	Papua New Guinea
PNGASL	–	Papua New Guinea Air Services Ltd.
RPT	–	regular passenger transport
SPS	–	Safeguard Policy Statement
STI	–	sexually transmitted infection
TSSP	–	Transport Sector Support Program

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2009 ends on 31 December 2009.
- (ii) In this report, "\$" refers to US dollars.

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FACILITY INVESTMENT PROGRAM SUMMARY

Borrower	Papua New Guinea
Classification	Targeting classification: General intervention Sector (subsector): Transport, and information and communication technology (air transport) Themes (subthemes): Economic growth (widening access to markets and economic opportunities), private sector development (private sector investment), capacity development (institutional development).
Environment Assessment	Project 1 is a category B project.
Investment Program Description	The investment program will deal mainly with the 21 national airports—Buka, Chimbu, Daru, Goroka, Gurney, Hoskins, Kavieng, Kerema, Kiunga, Lae (Nadzab), Madang, Mendi, Momote, Mount Hagen, Popenetta, Port Moresby, Tari, Tokua, Vanimo, Wapenamanda, and Wewak—which sustain the bulk of the country's international and domestic passenger and freight traffic. It will involve (i) devoting four or more tranches of the multitranche financing facility (MFF) to improving compliance with the safety and security standards of the International Civil Aviation Organization; (ii) designing and supervising airport improvements, and preparing and administering long-term maintenance contracts for all the national airports; and (iii) monitoring the socioeconomic benefits from the operating and maintenance improvements in the national airports. The investment program will also work closely with the capacity building program under the Transport Sector Support Program financed by the Australian Agency for International Development.
Multitranche Financing Facility	The Asian Development Bank (ADB) MFF is the most suitable mode of financing for the investment program because it (i) supports the Government's long-term vision for the civil aviation sector, as outlined in the current plans of the Civil Aviation Authority (CAA); (ii) enables ADB to sustain a long-term partnership in building institutional capacity; (iii) allows ADB to strengthen and improve the CAA's long-term strategic plans and to actively pursue policy dialogue throughout the investment program; (iv) allows the lessons of early tranches to be applied in subsequent tranches, and reforms to be implemented and efficiency to improve with the help of incentives; and (v) provides certainty to private companies interested in pursuing long-term opportunities in the civil aviation sector.
Rationale	Civil aviation (i) supports the socioeconomic development of the country by providing safe, efficient, reliable, sustainable, and affordable aviation services and infrastructure; (ii) gives all-weather access to the country and increases the mobility of

communities; and (iii) serves important community needs by making noncommercial destinations more accessible. Capacity constraints and deteriorating infrastructure, however, threaten the safety certification of the airports and place these socioeconomic objectives at risk. The CAA's well-articulated sector development plan (Civil Aviation Authority. 2008. *Strategic Investment Plan*. Port Moresby) addresses the risks, but the agency needs help in carrying out the plan and meeting obligations. External funding to rehabilitate and upgrade the national airports will support the Government's Medium Term Development Strategy (MTDS) objectives of economic growth, rural development, poverty reduction, and human resource development.

Impact and Outcome

The investment program will establish a sustainable civil aviation network to support economic growth (program impact). In that way, it will help meet the objectives of ADB's country strategy and program, particularly those for the transport sector, and the stated MTDS objectives of (i) economic growth, (ii) rural development, (iii) poverty reduction, and (iv) human resource development. The intended outcome is safer, more efficient, and more accessible air transport services in the project areas through (i) safer and more-secure air travel; (ii) better airport facilities; (iii) more-accessible markets, natural resource and mineral sites, and livelihood opportunities; and (iv) reduced costs of air travel to all project areas.

Investment Plan

The total cost of the investment program (including the anticipated public-private partnership for the international airport) is estimated at \$640.0 million equivalent. Project 1 will comprise improvements in the Jackson's Domestic Airport in Port Moresby (restricted to the extension of the domestic parking apron) and in the airports in Mount Hagen, Wewak, Hoskins, and Gurney. New security fences will also be built at Goroka and Kavieng. Project 1, including taxes, duties, physical and price contingencies, interest, and other charges, is expected to cost about \$112.0 million equivalent.

Table 1: Investment Program and Project 1 Investment Plan
(\$ million)

Item	Amount
Investment Program^a	
1. Airport Improvements	514.0
2. Program Support and Capacity Development	34.0
3. Program Management	17.0
Subtotal	565.0
4. PPP: Jackson's International Airport	75.0
Total	640.0
Project 1	
A. Base Cost^b	
1. Airport Improvements	81.0
2. Program Support and Capacity Development	9.0
3. Program Management	6.0
Subtotal (A)	96.0
B. Contingencies^c	12.0
C. Financing Charges during Implementation^d	4.0
Total (A+B+C)	112.0

PPP = public-private partnership.

^a In 2009 prices.

^b In 2009 prices. Includes taxes and duties of \$8.5 million.

^c Physical contingencies are computed at 10%; price contingencies, at an average of 1.9% on foreign exchange costs and 4% on local currency costs.

^d Includes interest charges.

Sources: Civil Aviation Authority and Asian Development Bank estimates.

Financing Plan

Table 2: Tentative Financing Plan

Source	Total (\$ million)	%
Investment Program		
Asian Development Bank	480.0	75.0
Private Sector Participation	75.0	12.0
Government	85.0	13.0
Total	640.0	100.0
Project 1		
Asian Development Bank	95.0	85.0
Government	17.0	15.0
Total	112.0	100.0

Sources: Civil Aviation Authority and Asian Development Bank estimates.

Multitranche Financing Facility: Amount and Terms

The proposal calls for ADB to provide up to \$480 million equivalent through the MFF to help finance the investment program. The funding will conform to ADB's policy on *Innovation and Efficiency Initiative: Pilot Financing Instruments and Modalities (2005)*, and will come primarily from ADB's Special Funds resources (subject to availability) and ordinary capital resources (OCR). The MFF will comprise several loans, conditional on the Government's submission of the related

periodic financing requests, execution of the related loan agreements, and fulfillment of the terms and conditions and understandings set forth in its financing framework agreement with ADB. The investment program will be implemented over 9 years. The OCR funding will be covered by Ordinary Operations Loan Regulations applicable to London interbank offered rate (LIBOR)-based loans, and the funding from Special Funds resources by the Special Operations Loan Regulations. In both cases, any modifications introduced under the individual loan agreements will apply. The Government will provide counterpart funds of \$85.0 million equivalent. For project 1, the borrower will be Papua New Guinea.

For project 1, the first tranche will combine three loans totaling about \$95 million equivalent—an OCR loan of about \$25 million and two loans from Special Funds resources totaling \$70 million equivalent (a “hard-term” Asian Development Fund [ADF] loan of \$20 million equivalent and a “soft-term” ADF loan of about \$50 million equivalent). The ADB loans will cover 85% of the cost of project 1. The first periodic financing request will be presented to the ADB Board of Directors together with the signed financing framework agreement. The Government will fund the remaining \$17.0 million equivalent, including local taxes and duties.

Period of Utilization	The loan utilization period will be 9 years, from 2010 to 2018, and the last periodic financing request must be submitted by 2013. Each specific loan will have its own closing date to match its implementation period.
Estimated Program Completion Date	31 December 2018
Executing Agency	Civil Aviation Authority
Implementation Arrangements	The CAA will be the executing agency and will be responsible for implementing the civil aviation infrastructure works and the institutional strengthening and capacity building programs under the investment program. A program steering committee will oversee the implementation of the investment program, monitor progress, approve the airports chosen for subsequent projects, and guide the executing agency and the implementing agencies. A project implementation unit (PIU), headed by the Project Director-ADB Project (already appointed) and supported by investment program consultants, will be responsible for implementing the sector policy and infrastructure components of the investment program. The PIU will hire all consultants and enter into all airport improvement contracts under the investment program.
Procurement	All procurement to be financed under an ADB loan will conform to ADB's <i>Procurement Guidelines</i> (2007, as amended from time to

time). All contracts over \$3 million for civil works and over \$0.5 million for goods will undergo international competitive bidding. Contracts below these thresholds will go through national competitive bidding and, as appropriate, minor contracts under \$100,000 will be awarded through shopping. Advance contracting and retroactive financing will be used for survey works, including geotechnical and other studies for the preparation of subsequent subprojects.

Consulting Services

International and national consultants will be hired for engineering design, civil works supervision, capacity building, advisory services, and studies as appropriate. They will be recruited through quality- and cost-based selection, in line with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). A consulting firm will be hired to provide construction supervision and individual consultants to serve as PIU advisers. Advance contracting and retroactive financing will be used for project analysts participating in pre-feasibility work, including surveys, social dimensioning and financial, economic, environmental, and engineering design studies in preparation for subsequent subprojects.

Investment Program Benefits and Beneficiaries

Although a majority of the population will benefit from having access to air transportation, the traveling public using the airports included in project 1 will be the immediate beneficiaries. Safer airports and more-available, more-frequent, more-reliable, and lower-cost transport services will benefit the airlines and the traveling public who rely on them, and increase travel to the project areas. The economic benefits foreseen from safer and better-maintained airports are: (i) more-varied economic opportunities, higher production, and more direct sales as a result of better access to regional markets and towns; (ii) more sales for market vendors because of the increase in customers; (iii) better business for trade store and industrial enterprises; and (iv) more opportunities to create and expand small and medium-sized enterprises. The anticipated social benefits are: (i) increased agricultural sales through the upgrading of markets near airport sites, (ii) more job opportunities through required civil works, (iii) higher school enrollments and better access to health care through increased household incomes, and (iv) more opportunities to diversify and expand industrial and agricultural production. The economic internal rate of return for project 1 is about 45%.

Risks and Assumptions

The major risks and assumptions are as follows.

Shortage of civil works contractors. The implementation of the proposed airport infrastructure works will be affected by the lack of capable international and national contractors. The Government is fully aware of the issues and is responding by (i) ensuring the safety of international contractors through the provincial governments, (ii) improving the licensing and classification of

national contractors, and (iii) providing opportunities to small and medium-sized enterprises in the construction industry.

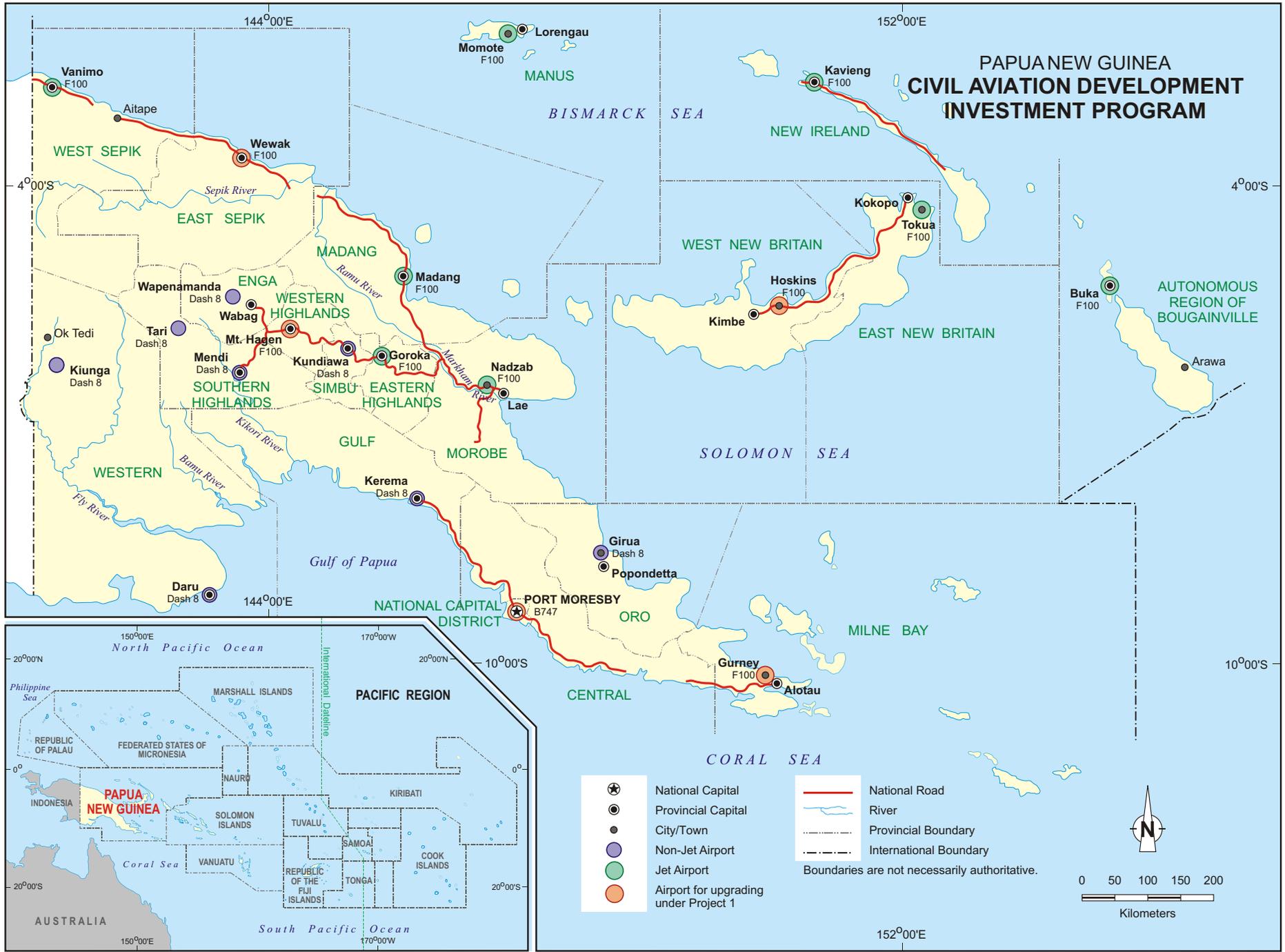
Land acquisition and resettlement. Customary landholding in PNG complicates and prolongs the process of land acquisition. Where required, the CAA will obtain the approval of communities for improvements in airport infrastructure through memorandums of agreement while the formal acquisition process is fulfilled. The investment program will help the CAA to carry out field surveys and prepare land acquisition documents for all the airports covered by the program, to enable the agency to pay for and acquire property for immediate use.

Security. Security in Papua New Guinea continues to be an issue with contractors working on ongoing infrastructure projects, including roads. The CAA, with the support of the provincial governments, must deal with this issue.

Institutional capacity. The investment program needs good institutions. Strong management and governance, good planning, best-practice concepts, sound project management, fiduciary oversight, and transparent bidding and contract management require not only experienced personnel but also efficient systems and procedures and controls.

Financing. ADB will provide the necessary funding for capital expenditure, but the main issue in the long run will be maintenance and repairs. For this, there must be a recurrent budget allocation. Budget allocations in the past were haphazard, and, in the continuing economic downturn, economic and financial conditions within and outside the country could deteriorate, thereby restricting growth and development.

PAPUA NEW GUINEA CIVIL AVIATION DEVELOPMENT INVESTMENT PROGRAM



I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed multitranche financing facility (MFF) for Papua New Guinea (PNG) for the Civil Aviation Development Investment Program. The design and monitoring framework for the investment program is in Appendix 1.

II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

A. Performance Indicators and Analysis

2. Civil aviation supports the socioeconomic development of the country by providing safe, efficient, reliable, sustainable, and affordable aviation services and infrastructure to facilitate access to the country and improve the mobility of communities. Geographic difficulties impede road connections in most of the country, so PNG relies instead on aviation for tourism and business, exports and imports, domestic freight, and social cohesion. Aviation services and infrastructure are essential for these activities and for access to noncommercial destinations.

3. Two key institutions administer, regulate, and manage the civil aviation sector. The Department of Works, Transport and Civil Aviation (DWTCA) is the lead agency for transport strategy and planning, including the monitoring of international obligations, the negotiation of air service agreements, economic regulation, the investigation of air accidents, and sector policy formulation and planning. The Civil Aviation Authority (CAA) is responsible for airports, air traffic management, and regulatory oversight.

4. PNG has more than 450 aviation facilities in PNG. Of these, 21 are designated national airports¹ owned and operated by the CAA on behalf of the Government. Mostly located in provincial capitals, these national airports are the focus of the proposed investment program. Seven can be upgraded to take larger aircraft; the rest need major rehabilitation to ensure safety, security, and adequate capacity for future growth.

5. Three major airlines and more than 20 other operators provide international and domestic services. Passenger traffic has recently grown by about 3% yearly on average, and freight demand by about 1%. Both rates are well below the growth in gross domestic product, which has averaged 6.4% in recent years.

6. Funding for the civil aviation sector comes primarily from Department of Treasury appropriations. The DWTCA is funded entirely by the Government, and the CAA is funded by a combination of revenues from airport and airspace fees and charges, licensing and regulatory fees, and annual government appropriations. An analysis of the sector is in Appendix 2.

¹ Buka, Chimbu, Daru, Goroka, Gurney, Hoskins, Kavieng, Kerema, Kiunga, Madang, Mendi, Momote, Mount Hagen, Nadzab (Lae), Pependetta, Port Moresby, Tari, Tokua, Vanimo, Wapenamanda, and Wewak.

B. Analysis of Key Problems and Opportunities

1. Challenges

7. **Facilities.** The national airports typically have (i) low compliance with safety and security standards, creating risks of accidents and illegal movements of people and goods; (ii) air-side pavements, terminal buildings, equipment, and utilities in poor condition; (iii) swiftly deteriorating pavements; and (iv) inadequate maintenance. Air navigation systems in PNG are unreliable and deteriorating because of (i) old and obsolete equipment, (ii) lack of spare parts, (iii) theft and vandalism, (iv) unreliable power and communications, and (v) logistics problems.

8. **Impact on operations.** Poor infrastructure and air navigation services lead to (i) flight cancellations, (ii) restricted operations, (iii) higher costs to airlines because of reduced payload and the need to divert flights, and (iv) higher costs to public and private business because of flight cancellations, rescheduling, and diversions. Airlines face the risk of airport closures and, because they cannot invest in future aircraft types, may have to reduce capacity into important tourism and economic regions, thereby constraining economic and social development.

9. **Institutions.** The aviation sector is facing institutional capacity issues at many levels. The Government's aviation strategies are demanding, but it has insufficient skills and depth of experience in all the delivery areas of policy and sector reforms to implement them successfully. The CAA is restructuring, but a key issue in the transition is functional capacity to meet expected outcomes. Besides the operating units that are being created, an important aspect will be divesting regulatory oversight, to eliminate conflicts of interest with operating responsibilities.

10. **Policy and strategy.** The Government's transport policies call for (i) safety and security improvements, (ii) better maintenance, (iii) upgraded national airports, (iv) an upgraded air traffic management system, and (v) sector-wide policy initiatives. Coordination and collaboration between the policy functions of DWTC and the business and service delivery functions of the restructured CAA must improve.

11. **Finance.** To finance airport compliance and cater for growth, the CAA relies on a combination of airport and airspace fees, licensing and regulatory fees, and annual appropriations from the Government derived from its community service obligation (CSO) policy. However, the Government's competing priorities for funds and fiscal strategies have resulted in significant underfunding of the CAA for many years. Furthermore, institutional problems have reduced the CAA's own capacity to fund safety and security maintenance, upgrades to meet present and future airport needs, and regulatory oversight of safety and security. Although the international airport and a few others may recover operating costs, most national airports are not commercially viable and are a drag on the CAA's annual financial performance and ability to fund investment. The CSO grants from the Government cover some of the shortfall, but the CAA needs external funding to meet all of its obligations and execute its strategic plan.

2. Government's Strategy and Ongoing Efforts

12. The Government's transport policies are the Medium Term Development Strategy (MTDS) 2005–2010 and the more detailed National Transport Development Plan (NTDP) 2006–2010. These documents contain the overall policies, objectives, and actions that guide the development and operation of the transport sector. Both are undergoing review, with completion expected within 2009.

13. MTDS 2005–2010 has seven priorities, including the “rehabilitation and maintenance of transport infrastructure.” The NTDP 2006–2010 vision for the aviation sector involves (i) competition on domestic routes and access to these routes by foreign airlines as part of the long-term upgrading plan for selected airports with international flight facilities; (ii) larger aircraft operating in major national airports; (iii) accessible, safe, reliable, efficient, and affordable air transport; (iv) improved and reasonably priced international services to establish PNG as a gateway between continents; and (v) lower-cost and safer passenger and cargo movements. The NTDP proposes major investments at six national airports (Gurney, Madang, Mount Hagen, Nadzab, Tokua, and Wewak) to facilitate growth and eventual competition on domestic routes. It also mandates the provision of services to all national airports, and government grants to meet the CAA’s revenue shortfall.

14. To fulfill these priorities, the Government, through the National Executive Committee, has endorsed the CAA’s Infrastructure Investment Plan–Long Term (2010–2030) as its sector plan. Certification, rehabilitation of national airports, and upgrading of six major national airports will require a total investment of K1.710 billion (\$547.6 million). Details of the plan are given in Appendix 2.

15. A key objective of NTDP 2006–2010 is to reform the CAA to become self-sufficient and fund much of the remedial maintenance of airports and airways. The CAA strategic plan is in line with the MTDS and NTDP policies and priorities. The key objectives of the plan are (i) to attend to critical safety and security needs and implement structural reform (short term), (ii) to facilitate economic and social development through sustainable aviation infrastructure (medium term), and (iii) to realize an acceptable rate of return on investments (long term).

3. ADB’s Strategy

16. ADB’s country assistance strategy² supports the implementation of MTDS 2005–2010 by tightening the focus of ADB’s program for maximum impact in priority areas. The transport sector is one of four main strategic areas of ADB engagement, building on ADB’s comparative advantage and its long-standing relationships with other development partners. The investment program will draw on ADB’s experience in preparing and implementing small airport improvement projects associated with regional and domestic airport development, particularly where rugged terrain makes air travel an important mode of transport. The project is included in the updated COBP 2009–2011.³

17. Since external assistance is now directed mainly at capacity development, ADB efforts will center on the necessary infrastructure improvements, with targeted assistance to fill gaps in institutional development and support the restructuring of the CAA, in coordination with technical assistance from the Australian Agency for International Development (AusAID) (see para. 32). The sector road map and policy framework is in Appendix 3.

18. The proposed investment program will cover (i) the infrastructure needed to comply with the safety and security standards of the International Civil Aviation Organization (ICAO); (ii) remedial maintenance on air-side pavements and infrastructure to allow national airports to

² ADB. 2006. *Country Strategy and Program (2006–2010): Papua New Guinea*. Manila; and ADB. 2007. *Country Operations Business Plan (2008–2010): Papua New Guinea*. Manila.

³ ADB. 2009. *Country Strategy and Program Midterm Review (2006–2010): Papua New Guinea* (Appendix 1). Manila.

maintain or provide unrestricted services; (iii) improvements in domestic airport infrastructure to provide access for larger and heavier aircraft; (iv) an upgraded air traffic management system, radar, surveillance equipment, and instrument landing systems for the international airport in Port Moresby; and (v) sector-wide policy initiatives to support the efficient and cost-effective transport of travelers and freight.

4. External Assistance

19. Most external assistance to PNG so far has come from AusAID, which has funded strategic studies, the services of specialist advisers to Government, small infrastructure projects, and the procurement of equipment. About \$10 million will be made available in these areas over the next 3 years under AusAID's ongoing Transport Sector Support Program (TSSP). There have been no significant investments in the sector from other external sources. ADB's current advisory assistance to the Government in the establishment of a public-private partnership framework could lead to private sector involvement at the Port Moresby international airport, but is still at a very early stage and will not affect the rest of the sector development plan.

5. Lessons

20. A key lesson from past performance in the sector is the importance of maximizing the recovery of operating costs, to allow the CAA to fund recurrent maintenance costs, avoid the costly cycle of deterioration and rehabilitation, and ensure continuous safety and security certification. By eliminating capacity constraints, investment can facilitate economic growth and a commensurate increase in traffic that will allow prudent operating expenditure to help achieve this objective. The restructuring of the CAA can also help to update and rationalize fees and link them to the demand created by expanded services.

21. Another key lesson is the importance of meeting the Government's commitment to maintain facilities that cannot achieve full commercial cost recovery but satisfy its obligations to the community. NTDP 2006-2010 sets a target of 75% of operating costs to be met through grants to the CAA; this figure should gradually reduce as traffic increases and tariffs (landing fees and terminal charges) are reviewed and updated. External support should be conditional on adherence to this commitment, with appropriate modifications in light of the investment program.

22. A third key lesson is the importance of developing efficient and effective institutional structures, carefully sequencing their implementation, and providing long-term support and capacity development in putting the sector road map into effect. The implementation of the Government's policies and strategies is very demanding and involves the successful coordination of many stakeholders, but a resource gap in experienced and qualified staff in the CAA is holding back the Government from meeting its objectives. Operating and regulatory functions housed in the same institution are also creating conflicts of interest. Continuous support for institutional development and for program monitoring and evaluation through the investment program (made possible by the long-term nature of an MFF) should be delivered through government systems and coordinated carefully with other external assistance.

6. Rationale for ADB Support

23. **Program rationale.** Civil aviation (i) supports the social and economic development of the country by providing safe, efficient, reliable, sustainable, and affordable aviation services

and infrastructure; (ii) gives all-weather access to the country and improves the mobility of communities; and (iii) provides access to noncommercial destinations, thereby meeting important service obligations to the community. Capacity constraints and deteriorating infrastructure, however, threaten the safety and security certification of airports and place these objectives at risk. The CAA has a well-articulated sector development plan⁴ for dealing with the risks but requires support to carry out the plan and meet its obligations. External funding to rehabilitate and upgrade the national airports and support their certification will advance the MTDS 2005–2010 objectives of economic growth, rural development, poverty reduction, and human resource development. Without the improvements, PNG's recent rapid economic growth may stall.

24. **Multitranches financing facility.** ADB's multitranches financing facility is the most suitable mode of financing for the investment program because it (i) supports the Government's long-term vision for the civil aviation sector, as outlined in the CAA's current plans; (ii) enables ADB to sustain the long-term partnership that is needed to build institutional capacity; (iii) allows ADB to strengthen and improve CAA's long term strategic plans and to actively pursue policy dialogue throughout the investment program; (iv) allows the lessons of early tranches to be applied in subsequent tranches, and reforms to be implemented and efficiency to improve with the help of incentives; and (v) provides certainty to private companies interested in pursuing long-term opportunities in the civil aviation sector. ADB's sector development program modality is not suitable because of the commitment charges that would be levied on the Government and, from previous project experience in PNG, the generally slow progress in physical implementation. With the MFF facility, the Government and the CAA will be able to implement projects with financing certainty matched with realistic implementation timetables.

III. THE PROPOSED INVESTMENT PROGRAM

A. Impact and Outcome

25. The investment program will establish a sustainable civil aviation network to support the economic growth of the country. In that way, it will help meet the objectives of ADB's country strategy and program,⁵ particularly those for the transport sector, and the Government's MTDS objectives of (i) economic growth, (ii) rural development, (iii) poverty reduction, and (iv) human resource development.

26. The investment program will result in safer, more-secure, and more-efficient all-weather access to air transport services in the project areas through (i) better airport facilities; (ii) safer and more-secure air travel; (iii) more-accessible markets, natural resource and mineral sites, and livelihood opportunities; and (iv) reduced costs of air travel to all the project areas. It will help achieve the Government's goal of securing and maintaining ICAO certification for the safety and security standards at its airport operations and facilities.

B. Outputs

27. The investment program will concentrate first of all on carrying out priority actions to comply with ICAO security and safety standards, and then on increasing capacity for growth in

⁴ Civil Aviation Authority. 2008. *Strategic Investment Plan*. Port Moresby.

⁵ ADB. 2006. *Country Strategy and Program (2006–2010): Papua New Guinea*. Manila.

services. The outputs will be as follows: (i) rehabilitated airport infrastructure, including runways, taxiways, and aprons; (ii) upgraded runways and passenger terminals that can accommodate larger aircraft; (iii) communication, navigation, surveillance, and firefighting equipment; (iv) better maintained facilities; and (v) an institutionally strengthened and reformed CAA and its operational units. The inputs will comprise financing for civil works and consulting services in program administration, construction supervision, and support for the ongoing institutional reforms.

28. The five airports covered by project 1 are the top priorities in the CAA's strategic plan. They serve about 1.5 million people, and economic analysis indicates that they are performing well. The Jackson airport is the country's main airport, with international connections, and the hub for all national airports. The Mount Hagen airport is the major airport in the Highlands region, providing access to the four major provinces (Chimbu, Enga, Southern Highlands, and Western Highlands provinces), the country's major coffee-growing and mineral resource-based economies. The Hoskins airport is the major airport for West New Britain and serves a major island economy that specializes in oil palm production. Wewak, the provincial capital of East Sepik, is the major town between Madang and Jayapura (Indonesia). It is a major coastal economy on the northern side of the mainland specializing in timber and natural resources. The Gurney airport provides connections with Alotau, the provincial capital of Milne Bay province, and access to tourist destinations along the country's lower-eastern coastline; a direct air transport link with Cairns, Australia, is planned. There were about 37,000 aircraft movements at the Jackson airport in 2008 and 15,000 at the Mount Hagen airport, and 1.0 million passengers in Jackson and 113,000 in Mount Hagen. In the same year, the airports in Gurney, Hoskins, and Wewak, averaged 3,000 aircraft movements and 32,000 passengers.

29. **Project 1.** The first tranche will finance the following, under project 1: (i) improvements in pavements and fencing identified as requiring emergency works to comply with ICAO safety and security standards; (ii) support for (a) engineering design, preparation of bid documents, and procurement by the CAA; and (b) preparation by the CAA of investment proposals for subsequent projects and tranches for ADB approval; and (iii) consulting services to CAA for the supervision of (a) airport improvement contracts for the five project 1 airports, and (b) long-term maintenance contracts for these five airports. In addition to the five airports, two others (Kavieng and Goroka) will have new security fences installed.

30. At the end of the program, (i) 21 national airports will be in compliance with ICAO security and safety standards, (ii) modern communication and navigation equipment will be providing enhanced services and generating additional revenue for flight information region operations and for safe landing and takeoff, (iii) the CAA and its subsidiary operations will have improved their capacity to operate and maintain the civil aviation sector, and (iv) cost recovery and sustainability policies will have been implemented throughout the civil aviation sector.

C. Special Features

31. **Long-term maintenance contracts.** Long-term maintenance contracts will be an integral component of the investment program. For the 21 national airports covered by the program, facilities will be upgraded and maintenance improved to a specified standard under civil works contracts for a contract period of 10 years. The maintenance contracts will be performance based, with fixed monthly payments contingent on meeting the performance standards, and defined penalties for underperformance. The maintenance contracts may be "unit rate" contracts to start with and convertible after 2 years into "performance-based"

contracts in compliance with ICAO standards. To ensure proper funding, tariffs reviews will take operation and maintenance requirements into consideration, and passenger terminal fees at the national airports will be adjusted to match the need for terminal and infrastructure maintenance.

32. Institutional strengthening and capacity development. DWTCA is still gaining capacity for effective policy coordination, and CAA is still developing the structure, experience, and expertise to deliver efficient services and facilities. To ensure adequate capacity for policy planning, coordination, and implementation, ADB will collaborate closely with the TSSP. The TSSP is a technical assistance initiative supported by AusAID that supplies both long-term and short-term advisers in policy development and administration. ADB will provide implementation and capacity development assistance in specialized areas related to the delivery of the investment program. On the policy planning and coordination side, ADB is supporting a review of NTDP 2006–2010, while the TSSP is supporting the preparation of the new long-term National Transport Strategy, Medium Term Transport Plan, and National Airports Strategic Management Plan. On the implementation side, ADB will continuously support the CAA in corporate strategy formulation, project development and management, and sustainable maintenance contracting, even as the TSSP supports advisers in financial management, human resource development and training, information technology, asset management, and safety management. This collaboration will allow all stakeholders to make the best use of the available assistance for greater complementarity. ADB's long-term, continuous support through the program will build ownership, develop local capacity, and strengthen government systems to establish better control.

33. Regional cooperation. To sustain the safety and security improvements in the airports and PNG compliance with ICAO standards, the investment program will facilitate assistance from the Pacific Aviation Safety Office (PASO). PASO is a regional intergovernmental organization formed with ADB loan support⁶ to provide aviation audit services to ADB member countries including PNG. PASO inspectors are expected to conduct yearly audits of airport safety and security according to an approved work program that has been negotiated with the CAA. PASO also conducts training in this area with a view to the progressive takeover of responsibilities by the planned independent safety regulator.

34. Private sector participation. The civil aviation network contributes significantly to the private sector involved in gold mining, oil and gas and other mineral production, and coffee growing and processing. Improved safety at airports, greater accessibility, and lower transport costs will therefore benefit the private sector immensely. As part of the ongoing institutional restructuring, CAA is being encouraged to operate on a commercial basis, charging its users and maintaining the network. To this end, CAA is undertaking an internal review, using its own resources, to help identify and better understand its cost structure and cost trends for the national airports. It will use this information in future studies to attract private sector participation and equitable tariff structures in the civil aviation sector. Arrangements are in place for a study (commenced in October 2009) of a possible partnership between CAA and the private sector in funding the operation and maintenance of Jackson's airport. The study is to be completed by February 2010. The investment program will center on the immediate high-priority safety and security requirements for compliance with ICAO standards and will not be affected by the outcome of the Jackson's airport study. ADB will also explore opportunities for cofinancing the other national airports with other aid agencies including AusAID.

⁶ ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to Papua New Guinea for the Establishment of the Pacific Aviation Safety Office Project*. Manila (approved in September, for \$1.5 million equivalent).

35. **Planning and policy framework.** NTDP 2006–2010 provides the overall policy framework for airports and air transport, and the CAA’s Long Term Investment Plan (LTIP) 2010–2030 provides the sector plan. Several initiatives have been taken by the Government and development partners to communicate these policies and supplement them with strategies for implementation. Appendix 3 gives the status of implementation of the civil aviation policies and the support they will receive from the investment program. The financing framework agreement (FFA) between PNG and ADB will set out the policy framework for the proposed projects under the MFF, which will be guided by NTDP 2006–2010 and LTIP 2010–2030.

36. Subsequent subprojects under the investment program will be closely aligned with NTDP 2011–2020, which the Government is now preparing and which is expected to incorporate the policy framework in Appendix 3. CAA is also preparing the National Airports Strategic Management Plan (NASMP) 2008–2018, documenting its approach to the future management of operating improvements in PNG’s national airports and setting up cost recovery models for the sustainability of airports supporting other modes of transport to facilitate economic development. The NASMP is to be completed by the end of 2009.

37. **Project implementation.** In view of the rapid deterioration of airport pavement structures and the need to keep the airports in operation, the CAA and the Government have created and staffed the project implementation unit (PIU) to help ADB process the proposed lending facility. The Papua New Guinea Resident Mission (PNRM) of ADB led the preparation of the investment program by assembling a team of international experts and by interacting daily with the PIU counterpart team members in the following areas: (i) civil aviation engineering, (ii) social development, (iii) environment, (iv) financial analysis, and (v) economic analysis. The PIU, with guidance from PNRM, has begun advance action in the preparation of procurement documents for (i) the parking apron at Jackson’s domestic airport, (ii) instrument landing system equipment for Jackson’s airport, (iii) security fencing for five domestic airports, and (iv) a review of the feasibility study of Vanimo domestic airport, on which the preparation of subsequent projects under the MFF tranches will be based. This implementation assistance, in coordination with the TSSP, will provide adequate capacity to implement a larger program than CAA has so far carried out.

D. Investment Plan

38. **Investment plan.** The investment program (including the anticipated public–private partnership for the international airport) will cost an estimated \$640.0 million equivalent. Project 1, including taxes, duties, physical and price contingencies, interest, and other charges, will cost about \$112.0 million equivalent. The cost estimates are summarized in Table 1 and given in detail in Appendix 4 (for the investment program) and Appendix 5 (for project 1).

Table 1: Investment Program and Project 1 Investment Plan
(\$ million)

Item	Amount
Investment Program^a	
1. Airport Improvements	514.0
2. Program Support and Capacity Development	34.0
3. Program Management	17.0
Subtotal	565.0
4. PPP: Jackson's International Airport	75.0
Total	640.0
Project 1	
A. Base Cost^b	
1. Airport Improvements:	81.0
2. Program Support and Capacity Development	9.0
3. Program Management	6.0
Subtotal (A)	96.0
B. Contingencies^c	12.0
C. Financing Charges During Implementation^d	4.0
Total (A+B+C)	112.0

PPP = public-private partnership.

^a In 2009 prices.

^b In 2009 prices. Includes taxes and duties of \$8.5 million.

^c Physical contingencies are computed at 10%; price contingencies, at an average of 1.9% on foreign exchange costs and 4% on local currency costs.

^d Includes interest charges.

Sources: Civil Aviation Authority and Asian Development Bank estimates.

39. **Indicative road map.** The investment program mirrors the road map for assistance to the civil aviation sector in dealing with such sector constraints as physical infrastructure (deteriorating air-side and land-side infrastructure), sector policy shortcomings (no policy on social safety obligations, noncompliance with ICAO safety and security requirements, etc.), and capacity building requirements. An indicative plan for tranche releases (Appendix 4) shows five airports in project 1 (Jackson's domestic airport, Mount Hagen, Wewak, Hoskins, and Gurney), five more airports in tranche 2 (Nadzab, Madang, Kavieng, Goroka, and Tokua) in 2011, and the rest of the airports in 2012 through 2013. The sequencing of project airports takes into account the priority safety requirements associated with the repairs in airport pavements to meet the safety requirements of aircraft of Air Niugini and other airlines. In sector policy reform, the investment program will focus on separating the operating and regulatory functions of the CAA, reviewing and revising civil aviation charges, and restructuring CAA into separate legal entities representing functional responsibilities (a timetable for the policy reform targets is in Appendix 1). As part of the FFA, trigger points regarding compliance with ADB safeguard policies, implementation of agreed policy reforms, advance procurement actions, government approval clearances, progress in the implementation of ongoing subprojects, etc., will be agreed on with the Government and the CAA before subsequent MFF tranche releases are approved. Appendix 6 lists potential airports for subsequent projects and the criteria used in their selection.

E. Financing Plan

40. Table 2 summarizes the tentative financing plan for the investment program and project 1.

Table 2: Tentative Financing Plan

Source	Total (\$ million)	%
Investment Program		
Asian Development Bank	480.0	75.0
Private Sector Participation (PPP) ^a	75.0	12.0
Government	85.0	13.0
Total	640.0	100.0
Project 1		
Asian Development Bank	95.0	85.0
Government ^b	17.0	15.0
Total	112.0	100.0

PPP = public-private partnership.

^a Expected to receive from private sector for Jackson's international airport.

^b Includes taxes and duties of \$8.5 million

Sources: Civil Aviation Authority and Asian Development Bank estimates.

41. **Multitranche financing facility: amount and terms.** The proposal calls for ADB to provide up to \$480 million equivalent through the MFF to help fund the investment program. The funding will conform to ADB's policy,⁷ and will come primarily from ADB's Special Funds resources (subject to availability, as described in para. 46 below); supplemental funding will come from ordinary capital resources (OCR). The MFF will comprise several loans, conditional on the Government's submission of the related periodic financing requests (PFRs), execution of the related loan agreements, and fulfillment of the terms and conditions and understandings set forth in its FFA with ADB. The investment program will be implemented over 9 years. The OCR funding will be covered by Ordinary Operations Loan Regulations that apply to London interbank offered rate (LIBOR)-based loans, and the funding from Special Funds resources Special Operations Loan Regulations. In both cases, any modifications introduced under the individual loan agreements will apply. The Government will provide counterpart funding of \$85.0 million equivalent, including all local taxes and duties. In addition, ADB will explore and pursue viable cofinancing opportunities (with the Japan International Cooperation Agency, Korean EXIM Bank, European Investment Bank, etc.) during the implementation of the investment program and the preparation of subsequent tranches. The grant component will be at least 35% of the MFF, in compliance with the Government's Medium Term Debt Strategy for 2009-2013. ADB's analysis of the sustainability of PNG's external debt shows that PNG will remain at moderate risk of external debt distress over the medium term after the four project tranches of the investment program. External debt burden indicators will be well below their indicative thresholds under the baseline scenario, but some vulnerability to further terms-of-trade shocks and slower economic growth will also continue.

42. In accordance with the FFA, the Government's first PFR for project 1 will cover a blend of three ADB loans totaling about \$95 million equivalent to help finance project 1—an OCR loan of about \$25 million and two loans from Special Funds resources totaling \$70 million equivalent (a "hard-term" Asian Development Fund [ADF] loan of \$20 million equivalent and a "soft-term" ADF loan of about \$50 million equivalent). The ADB loans will finance 85% of the total cost of project 1.

⁷ ADB. 2005. *Innovation and Efficiency Initiative: Pilot Financing Instruments and Modalities*. Manila.

43. OCR loans carry a term of 25 years, including a grace period of about 5 years, an interest rate in line with ADB's LIBOR-based lending facility, a yearly commitment charge of 0.15%, and other terms and conditions stated in the loan agreement.

44. "Hard-term" loans from Special Funds resources normally carry a term of 32 years, including a grace period of up to 8 years, interest of 1.6% per year, and other terms and conditions set forth in the loan agreement.

45. "Soft-term" loans from Special Funds resources have a term of 32 years, including a grace period of up to 8 years, yearly interest of 1.0% during the grace period and 1.5% thereafter, and other terms and conditions stated in the loan agreement.

46. The Government has been advised that the allocation of ADF for the second and subsequent tranches will be subject to (i) the general availability of ADF resources, (ii) PNG's access to such resources under ADB's *Graduation Policy*⁸ and the requirements of the ADF donors, and (iii) the availability of such resources to PNG under ADB's *Policy on Performance-Based Allocation for Asian Development Fund Resources*.⁹

F. Implementation Arrangements

1. Investment Program Monitoring and Project Management

47. The CAA will be the executing agency and will be responsible for implementing the civil aviation infrastructure works and the institutional strengthening and capacity building programs under the investment program. A program steering committee will oversee the implementation of the investment program, monitor progress, approve the airports selected for subsequent projects, and guide the CAA and the implementing agencies. The program steering committee will be chaired by the CEO of CAA and members will have representatives from the Papua New Guinea Air Services Ltd. (PNGASL), the Department of Treasury, the Department of National Planning and Monitoring, the Department of Transport, ADB PNG Resident Mission, Air Niugini Airlines, and civil aviation stakeholder organizations as members. The committee will meet at least once each quarter.

48. A PIU, headed by the director-ADB Project (already appointed) and supported by investment program consultants, will be responsible for implementing the sector policy and infrastructure components of the program. It will hire all consultants and enter into airport improvement contracts under the program. The current PIU national staff combines skills in civil engineering, aviation equipment engineering, financial accounting, economics, environmental management, and procurement. The PIU is now engaged in advance bid document preparation for the following: (i) extension of the domestic parking bay at Jackson's airport; (ii) acquisition of instrument landing system equipment for Jackson's airport; (iii) security airport fencing for the Goroka, Gurney, Hoskins, Kavieng, and Wewak airports; and (iv) topographic and geotechnical surveys. The bidding is expected to be substantially completed by December 2009. The early establishment of the PIU will allow the national counterpart staff to gain enough technical skills to prepare subsequent subprojects much earlier than in the past. In addition, the Papua New Guinea Resident Mission of ADB will continuously assist and guide the PIU in complying with ADB procurement procedures and practices.

⁸ ADB. 2007. *Review of the Asian Development Bank's 1998 Graduation Policy*. Manila.

⁹ ADB. 2004. *Review of the Asian Development Bank's Policy on the Performance-Based Allocation of Asian Development Fund Resources*. Manila.

2. Preparation of Project 1 and Subsequent Projects

49. The investment program will follow the MFF implementation procedures. For project 1, the support consultants will assist CAA in detailed engineering, bid document preparation, environment and resettlement planning, tendering, and contract award. All resettlement activities will be completed before the start of civil works. For subsequent projects, the CAA, with the assistance of the consultants, will (i) select the project airports on the basis of the agreed selection criteria (Appendix 6); (ii) prepare the project report, including technical, economic, environmental, and social assessments; and (iii) prepare a PFR for each airport. The project report will conform to the criteria and procedures stated in the FFA, and other related requirements of the Government and ADB. After appraising the technical, financial, and economic feasibility of each project and compliance with safeguard requirements, the CAA will submit to ADB, through the Department of National Planning and Monitoring, a summary appraisal report in the format specified in the investment program administration memorandum and the draft PFR. ADB will undertake due diligence according to its relevant policies and procedures, and approve the CAA's appraisal, subject to any amendments. If required by ADB, the CAA will amend the PFR and submit it to ADB for approval by its due date.

3. Implementation Period

50. The investment program will be implemented over a period of 9 years until December 2018. Project 1 is expected to be completed by 2012. CAA will prepare detailed implementation schedules for the subsequent projects. An indicative implementation plan for the investment program and a detailed implementation schedule for project 1 are in Appendix 7.

4. Procurement

51. All procurement to be financed under an ADB loan will conform to ADB's *Procurement Guidelines* (2007, as amended from time to time). All contracts over \$3 million for civil works and over \$0.5 million for goods will undergo international competitive bidding. Contracts below these thresholds will go through national competitive bidding and, as appropriate, minor contracts below \$100,000 will be awarded through shopping. (The procurement plan is in Appendix 8.) A procurement capacity assessment has concluded that procurement activities associated with the investment program can use the CAA's existing procurement systems and procedures.

5. Consulting Services

52. International and national consultants will be hired for engineering design, civil works supervision, capacity building, financial accounting, advisory services, and studies as appropriate. The consultants will be recruited through quality and cost-based selection (at the standard 80:20 ratio) in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time). A consulting firm will be recruited to carry out detailed design and construction supervision, and individual consultants to serve as PIU advisers.

53. Project 1 will require a total of 1,000 person-months of consulting services (357 international and 643 national). (Outline terms of reference for the services are in Supplementary Appendix A.) Additional consulting services, if necessary, will be procured under subsequent projects. The consulting services will be financed from the ADB loans.

6. Advance Contracting and Retroactive Financing

54. ADB Management has approved advance contracting and retroactive financing for the investment program and for project 1 preparation. Advance contracting will be used for the pre-feasibility work of project analysts including survey works (geotechnical studies and topography), social dimensioning, and financial, economic, environmental, and engineering design preparation for subsequent subprojects. Retroactive financing for the PFRs under the MFF will be limited to 20% of the proceeds of the individual loans under the MFF, provided that expenditures comply with the agreed procedures and are made within the 12 months before the signing of the pertinent loan agreement under the MFF. Retroactive financing will be restricted to eligible expenditures—seminars on business opportunities, PIU incremental costs including project officers' remuneration, office equipment, surveys, consulting services, and civil works. The Government and the CAA have been informed that the approval of advance procurement action and retroactive financing does not in any way commit ADB to finance the subprojects. As part of advance procurement, the CAA's PIU team will have substantially completed the prequalification and bidding exercises for the Jackson's airport (surveys, extension of parking aprons for domestic operations, and procurement of air navigation equipment) and the security fences at most of the airports covered by project 1 before the investment program is considered by the ADB Board of Directors.

7. Investment Program Performance Monitoring and Evaluation

55. Targets and indicators for monitoring and evaluating the investment program performance have been discussed with the CAA, and the key targets and indicators have been included in the design and monitoring framework (Appendix 1). The consultants for program implementation support will work with the CAA to collect data from relevant agencies, including provincial governments and stakeholders, for use in measuring performance against the indicators at inception, 3 years after each project, and at the end of the investment program. The CAA, with the assistance of the supervision consultant, will monitor and evaluate the impact of the investment program to ensure that the completed infrastructure is being managed effectively and the benefits are maximized. ADB Management will prepare periodic reports on overall progress to the Board.

8. Governance and Anticorruption Measures

56. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the Government. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the projects under the investment program. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* will be included in the loan agreements and bidding documents for the investment program. In particular, all contracts financed by ADB in connection with the investment program shall include provisions specifying the right of ADB to audit and examine the records and accounts of CAA and its subsidiary entities, and all contractors, suppliers, consultants, and other service providers as they relate to the investment program.

57. The investment program will be implemented as far as possible through existing institutions and country systems. As required by ADB,¹⁰ a governance risk assessment and management plan (GRAMP) (Supplementary Appendix B) put together during the preparation of the investment program identified the risks and associated mitigating actions, and these were discussed with the Government. Three thematic areas—public financial management, procurement, and anticorruption measures—were assessed for significant risks. The following governance safeguards will mitigate the risk of misuse of funds and improve governance, accountability, and transparency, according to the GRAMP: (i) the disclosure of updated and detailed information on project implementation on the CAA website; (ii) the timely disclosure of information on the selection of consultants and contractors in local newspapers and on the website; (iii) the dissemination to the public of such information as the service expected from performance-based contracts; (iv) compliance with ADB procurement rules; (v) independent verification of the quantity, quality, and costs of works by an international supervising consultant (or equivalent); (vi) comprehensive accounting support to ensure, among other things, timely and rigorous reconciliation, orderly record keeping, and strict adherence to financial management policies and internal controls; (vii) independent external auditing of financial statements and, where appropriate, contracts and project accounts; (viii) supervision by ADB and other funding agencies; and (ix) forensic audits of alleged cases of corruption.

9. Accounting, Auditing, and Reporting

58. The CAA has agreed to adhere to sound financial management requirements while implementing the investment program. It will prepare annual financial statements on an accrual accounting basis and in accordance with international financing reporting standards, and will maintain separate and adequate project records and accounts to identify (i) the goods and services financed from the loan proceeds, (ii) the financing resources received, (iii) expenditures incurred on the components of each project, and (iv) counterpart and cofinancing funds received and spent. The agency will hire independent external auditors acceptable to ADB to audit the consolidated project accounts, including counterpart funds, yearly. It will submit to ADB certified copies of the audited accounts, as well as the auditor's report, in English within 6 months of the end of each financial year during the implementation period. CAA has been advised that ADB requires the timely submission of the audited project accounts and financial statements, and that it may suspend the disbursement of ADB loans if the requirement is not complied with.

59. The CAA will prepare and submit to ADB quarterly progress reports on individual projects, including (i) a narrative description of progress made during the reporting period, (ii) changes in the implementation schedule, (iii) problems or difficulties encountered, and (iv) activities to be undertaken in the next reporting period. The CAA will also prepare and submit to ADB a project completion report within 3 months of the completion of each project, and an investment program completion report after the completion of all projects under the investment program.

10. Disbursement Arrangements

60. The loan proceeds will be disbursed according to ADB's *Loan Disbursement Handbook* (2007, as amended from time to time) until 30 June 2019. Direct payment procedures will generally be used for airport improvement civil works and consulting services contracts. The

¹⁰ Applicable policies and guidelines include: (i) ADB. 2006. *Second Governance and Anticorruption Action Plan*. Manila; and (ii) ADB. 2008. *Guidelines for Implementing ADB's Second Governance and Anticorruption Action Plan (GACAP II)*. Manila (May).

CAA will maintain separate bank accounts for government counterpart funds for project 1 and separate accounting records for subsequent project loans, in accordance with ADB's *Loan Disbursement Handbook* and detailed arrangements agreed on by the Government and ADB.

11. Reviews

61. ADB will field inception missions within 3 months of the approval of the loan(s) for each project, and at least two review missions a year. The Government and ADB will jointly undertake a midterm review of project 1 within 2 years of its start and a midterm review of the investment program by 2014. The timing of the midterm reviews of subsequent projects will be agreed on during the appraisal of each project. The midterm reviews will center on (i) program impact, (ii) implementation progress, (iii) progress with the policy framework, (iv) the performance of consultants and contractors, (v) the status of compliance with undertakings in the FFA and covenants in the individual loan agreements, and (vi) the need for any midcourse changes in the scope or schedule of the investment program to achieve its full impact.

IV. PROGRAM BENEFITS, IMPACT, ASSUMPTIONS, AND RISKS

A. Benefits

62. Although a majority of the country's population will benefit from having access to air transportation, the traveling public using the airports included in project 1 will be the immediate beneficiaries. Safer and better-maintained airports will increase the availability, frequency, and reliability of transport services and lower their cost, to the benefit of the airlines and the traveling public, and result in travel to the project areas. Among the anticipated economic benefits are (i) more diverse economic opportunities, higher production, and more direct sales as a result of better access to regional markets and towns; (ii) more sales for market vendors because of the increase in customers; (iii) better business for hospitality, trade store, and industrial enterprises; and (iv) more opportunities to create and expand small and medium-sized enterprises.

63. The anticipated social benefits include: (i) increased agricultural sales from upgraded markets near the airports, (ii) more job opportunities through required civil works, (iii) higher school enrollments and better access to health care with the increase in household incomes, and (iv) more opportunities to diversify and expand industrial and agricultural production.

64. The improved airport facilities will increase the mobility of people and make markets, resources, and opportunities more accessible to them. People living in the project areas will benefit directly from job opportunities through the required civil works, market upgrading, and business opportunities (particularly in tourism). Airport users will benefit, and so will the local communities at each project site, including airport market vendors (especially women selling vegetables, food, and handicrafts). Public transport service industries and tourism-associated industries will be the secondary beneficiaries. The five airports (including Jackson's in Port Moresby) under project 1 serve a population of up to 1,586,978.

B. Financial Analysis, Financial Evaluation, and Financial Management Assessment

1. Financial Analysis and Financial Evaluation

65. The CAA had operating revenues of K28,400,087 and operating expenditures of K69,179,340 in 2008. It also received a substantial government subsidy of K42,400,000 to cover the costs of restructuring, as well as other government subsidies amounting to K48,096,033. The revenues from civil aviation activities alone, without the ongoing government subsidies, are not enough to cover its operating expenditures. These figures exclude overflying charges of K17.98 million, which are accounted for separately by PNGASL.

66. Projected financial statements were prepared for the project 1 airports and PNGASL. The projections were based on assumptions about the following: (i) scheduled and projected aircraft movements, (ii) projected number of passengers, (iii) rates charged for the landing of each type of aircraft, and (iv) passenger service charges for departing passengers. The projected financial statements indicate that PNGASL and Jackson's airport are sustainable in the long term,¹¹ but the smaller project 1 airports will be only marginally viable without ongoing government support. The CAA is now undertaking a special review of the smaller airports to establish accurate operational cost data and begin rationalizing and optimizing costs.

67. The financial internal rate of return (FIRR) was estimated through a comparison of with-project and without-project scenarios. The FIRRs for PNGASL (167%) and Jackson's airport (12%) compare favorably with the weighted average cost of capital of 2.42%. The smaller project 1 airports have negative FIRRs; however, the investment program for the project 1 airports must proceed because of the safety and security compliance issues identified earlier (Supplementary Appendix C).

68. Given the viability issues associated with the smaller project 1 airports, specific performance measures for monitoring the viability of the CAA would be useful. These performance measures would focus on the two key drivers that CAA must concentrate on to become viable in the long term—containing expenditures and improving cash flow. A profitability measure and a cash efficiency measure will therefore be included in the loan agreement. For example, in 2008, CAA expenditures were nearly four times greater than revenues (excluding government subsidies). The target benchmark should be to reduce the operating ratio by at least 20% percent by FY2011. Poor receivables management further strains the viability of the CAA. In 2008, the number of days' receivables was 567.¹² The benchmark will be set at no more than 75 days by FY2012.

69. Budgeting and the recording and reporting of airport information must be significantly strengthened to guide the CAA in managing the airports and making future pricing decisions. Costs and revenues must be appropriately allocated, and monthly reporting of the key drivers of the business must be introduced. The key drivers include aircraft movements for landing and parking fees, passenger movements for terminal facility charges, and number of leases and concessions and the revenues derived from them. Also, as much as possible for each airport,

¹¹ In 2008, Jackson's airport had revenues 37–160 times greater than those of the smaller project 1 airports.

¹² A measure of the average time it takes a company's customers to pay for purchases. The figure for 2008 was abnormally high; even so, the figures for 2006 (170) and 2007 (174) were high compared with normally accepted commercial benchmarks.

actual revenues and expenditures (rather than an allocated portion) should be reported, to improve accountability.

70. Besides cost containment, better cash management, and stronger airport information systems, there must be an increase in revenues. Tariffs must be reviewed frequently to protect against inflationary pressures and achieve sustainability in asset maintenance. These measures will be dealt with in the policy dialogue under the investment program, and technical expertise will be provided. Attracting larger planes could bring in more revenues at some airports, but non-aero income is the area of opportunity particularly at the larger airports. Such income would help reduce the CAA's reliance on government subsidies and improve the viability of the airports business. The investment program will help bring these airports up to international safety standards to make the airports business more attractive to international airlines and allow local airlines to offer more flights and upgrade to a larger fleet of aircraft.

2. Financial Management Assessment

71. Effective financial management within the CAA, both in the effective use of funds and in the safeguarding of assets created, will be a critical success factor for project sustainability. ADB projects in PNG in recent years have done poorly in both implementation and development outcomes, relative to projects in other ADB developing member countries. The major project implementation issues generally are as follows: (i) delays in the approval of contracts by the National Executive Council, (ii) delays in the provision of counterpart funds, and (iii) delays in the submission of audited annual project accounts. A financial management assessment, as required by ADB, rated the overall inherent risk substantial and the overall control risk high¹³ (Supplementary Appendix D). Particular issues involve insufficiencies in the supporting documentation submitted to substantiate the liquidation of imprest funds and difficulties in the audit of annual project accounts due to poor project record keeping, unreconciled bank accounts and ledger accounts, and lengthy delays in receiving responses to audit queries. Given these previous issues, direct payment procedures will predominate, imprest accounts will not be established, and the reimbursement procedure for eligible expenditures will apply with full supporting documentation (see para. 60 above). In addition, ADB is now processing capacity development technical assistance for Supporting Public Financial Management Project to strengthen the oversight and monitoring of statutory authorities in PNG, including the CAA.

72. The PIU, supported by an accountant and a finance clerk, will be required to maintain separate and adequate project records and accounts to identify (i) the goods and services financed from the loan proceeds, (ii) the financing resources received, (iii) the expenditures incurred for each project component, and (iv) the counterpart and cofinancing funds received and spent. The CAA will hire independent external auditors acceptable to ADB to audit the consolidated project accounts yearly, and will submit to ADB certified copies of the audited accounts, as well as the auditor's report, in English within 6 months of the end of each financial year during the implementation period.

C. Economic Analysis

73. For the economic evaluation, the benefits of project 1 airports were calculated in terms of users' willingness to pay, as reflected in incremental revenues from airport operations, such as landing charges and other airport operating fees and charges. The evaluation also included

¹³ These ratings are consistent with similar assessments made by development partners in the transport sector.

an assessment of (i) benefits to operators, such as savings in direct wear-and-tear costs and fuel; (ii) benefits to passengers, such as direct time savings; (iii) benefits from safety improvements; and (iv) benefits to regional and local communities from such things as the development of market sales and tourism. The analysis identified the value added by more-reliable aircraft operations made possible by improved safety standards at the project 1 airports and more-efficient aircraft handling of arrival and departure passengers. These operating improvements would result from improvements in airport security arrangements, runway extensions, extensions in aircraft parking aprons, and terminal improvements.

74. The economic costs for project 1 include the resource costs for traded and non-traded costs, materials, and labor. All cost elements were valued at border prices, with all taxes and duties excluded. A standard conversion factor of 0.90 was applied to the financial costs of non-traded inputs to calculate economic prices. Subproject facilities are expected to have an average economic life of 20 years.

75. Aircraft, passenger, and freight movements were examined by flight category to identify current and future trends in scheduled flights, second-level airline operations, and charter operations in particular, identifying the future impact of natural resource exploration and the development impact on particular regional airports in PNG. While the full impact of the potentially large liquefied natural gas project has not yet been specified, the potential increase in charter aircraft operations through Mount Hagen airport was identified and incorporated in traffic forecasts and the economic impact associated with project 1.

76. The economic internal rate of return for project 1 is estimated at 45%. A sensitivity analysis tested the effects of possible unfavorable scenarios resulting from changes in the key parameters that determine the project's costs and benefits. This analysis indicates that the project's economic viability would remain satisfactory even under adverse scenarios, and that it would require a cost increase of 200% or a decrease in benefits of 66% to reach a cutoff economic internal rate of return of 12%. An economic analysis of project 1 airports is in Appendix 9.

D. Poverty and Social Impact

77. **Social impact and poverty assessment study.** If airfares are reduced, people will have more access to regional markets and towns, and will therefore be able to expand and diversify their agricultural production, particularly cash crops. Increased direct sales at markets will have a positive impact on household incomes. People are expected to get better prices for their products when they can sell at upgraded markets rather than through middlemen. There will be also increased opportunities for the creation and expansion of small businesses throughout the region because of the increased accessibility and customers. The increase in household incomes would also make families better able to pay for education and health care. Therefore, the program will contribute not only to economic growth but also, indirectly, to improved social indicators such as health and education outcomes (Supplementary Appendix E).

78. Apart from Jackson's airport and the Boram (Wewak) airport, the four other airports are more than 10 kilometers from the main town centers. Hoskins is more than 40 kilometers from the town center. Women in the immediate vicinity of the airport walk with their children to sell their produce at informal market grounds. These are usually undeveloped or vacant pieces of land close to or adjacent to the terminal and parking area of the airport. The investment program

will support the upgrading of existing local markets around the airport sites through the provision of better water supply and sanitation facilities, but the local government and the CAA must agree to make the improvements and obtain the agreement of the landowners.

79. The airports are now used mostly by employees of large companies, government, a few local successful businesses, nongovernment organizations, and tourists. An increase in the passenger volume, particularly in the tourism sector, is foreseen to lead to lower airfares throughout the region and the country, making air travel more affordable to the general population. A summary poverty reduction and social strategy is in Appendix 10.

E. Environmental Impact

80. Project 1 is classified under environmental category B, according to ADB's *Environment Policy* (2002), *Environmental Assessment Guidelines* (2003), and *Staff Instruction on the Use of Multitranchise Financing Facility*,¹⁴ and as a level 2 activity under PNG's Environmental Act (2000) and Environment (Prescribed Activities) Regulations (2002). Each subsequent project will be categorized in accordance with ADB's *Environment Policy* rule that is in place at the time the PFR is submitted to ADB. An initial environmental examination (IEE) for each airport rehabilitation under project 1 was undertaken to assess the potential environmental impact. An environmental assessment review framework that presents the general anticipated environmental impact of the investment, the subproject selection criteria, and the subproject environmental procedure (Supplementary Appendix F) was prepared. The review framework will guide the preparation and approval of environmental assessments of future projects considered for financing under the investment program. An environment permit will be secured from the Department of Environment and Conservation for activities listed in the *Environment (Prescribed Activities) Regulation* (2002). The summary IEE is in Appendix 11.

81. All five airports under project 1 will be rehabilitated and improved within their existing boundaries. The environmental impact of airport rehabilitation during construction was assessed, and is deemed insignificant since no major civil works will be undertaken and the environmental impact will be temporary and reversible and can be mitigated with available methods. The environmental impact during operation will generally be due to waste and pollution, noise, and vibration. To address this impact, the project will maintain the sewage system in good condition as part of its airport maintenance program. The impact from noise and vibration during airport operation is not expected to increase significantly. A noise buffer will nonetheless be put up, where necessary, between the facility and the surrounding areas to minimize the impact. The environmental mitigation and monitoring procedures set out in the IEE and the environmental management plan (EMP) will minimize the environmental impact from the construction and operation of the subprojects to insignificant levels.

82. For future subprojects, the EMP for each subproject will be incorporated into the design and implementation of airports under these projects. The new Safeguard Policy Statement (SPS) dated 20 July 2009 and effective on 20 January 2010 will be applicable. The EMP will guide the PIU, supervisory consultants, and contractors in managing, monitoring, and reporting environmental impact mitigation measures and compliance. Civil works may begin only after ADB approves the environmental assessment report on the subprojects and a permit for activities specified in the Environment (Prescribed Activities) Regulations (2002) is received from the Department of Environment and Conservation. The environmental management

¹⁴ ADB. 2006. *Staff Instruction on the Use of Multitranchise Financing Facility*. Manila.

capacity of the PIU to ensure compliance with the Government's and ADB's requirements will thus be strengthened.

F. Social Safeguards

83. **Involuntary resettlement.** Most of the major airports and terminal facilities in PNG are owned and operated by the Government through the CAA. Most of the proposed improvements in the 21 airport sites will be undertaken within existing airport boundaries. In case additional land is needed for the investment program (any such requirement is expected to be minor), the CAA, through the Department of Land and Physical Planning, will process the formal land acquisition according to the Land Act of 1996.¹⁵ Since formal land acquisition takes considerable time, the CAA will also seek alternative options exercised by other agencies such as the Department of Works. The provincial government will negotiate a memorandum of agreement with the affected clans and communities (local government) to allow the use of the land for airport upgrading.

84. In the case of project 1, all civil works, including the improvement and extension of runways, will be undertaken within the existing airport boundaries (state-owned land); hence, no land acquisition is anticipated. However, minor issues related to permanent and temporary resettlement may have to be resolved. At the site in Wewak, the proposed extension of the Boram airport runway is expected to require the diversion of a feeder road (Perigo road) that links the settlement to the Brandi Highway. This diversion will result in the relocation of a soccer field of the Correction Institution Services (CIS). The CAA and the CIS have agreed to process the relocation, and the actual work will be included in the scope of work for the Wewak airport upgrading. Other minor permanent and temporary impact under project 1 includes compensation for the felling of a few trees.

85. The number of people that may experience the incidental impact of the upgrading of airports under the program is therefore expected to be small and well within the category of "no significant resettlement impact" under ADB's policy. The four airport sites under project 1 were screened to confirm the level of the impact. The program is a category B program with respect to involuntary resettlement. For future subprojects, the SPS will apply.

86. A resettlement framework was prepared for the investment program and reviewed by the Government to establish policies and procedures for compensating the affected people for lost or damaged assets (Supplementary Appendix G). (The summary resettlement framework is in Appendix 12.) The resettlement framework is based on the principles established in ADB's *Involuntary Resettlement Policy* (1995) and relevant sections of the *Operations Manual* (as updated in 2006). The resettlement framework will guide the CAA in preparing and implementing the resettlement issues in the investment program. Since the impact of the project 1 airports will be minor, due diligence reports were prepared for four sites including Wewak, Hoskins, Mount Hagen, and Gurney (Supplementary Appendix H). The reports will be further updated on the basis of the detailed engineering designs during implementation.

87. **Indigenous people.** PNG is made up of over 600 islands and is a diverse agglomeration of tribal groups speaking 800 distinct languages. No particular ethnic group

¹⁵ Regarding the state alienation of customary land, the Land Act of 1996 states that affected clans and communities will be compensated for land; individuals and households with assets on the land will be compensated for any damage to or loss of these assets; and clans and communities will be compensated according to the provisions of agreements.

dominates economic or political life within the sites for project 1, which include four provinces (East Sepik, West New Britain, Western Highland, and Milne Bay) and the National Capital District. Two major languages are spoken in these areas. Pidgin is spoken by the majority and Hiri Motu is spoken mainly around Port Moresby and elsewhere in Papua. English is the language of administration and official communication, but Tok Pisin, Hiri Motu, or the local language (Tok Ples) is the preferred day-to-day means of communication.

88. In general, no tribes or ethnic groups in PNG are significantly different from others or consider themselves to be minorities; therefore, no ethnic minority groups are expected to be adversely affected by the investment program. The program is a category B program with respect to ADB's *Policy on Indigenous Peoples* (1998); no separate framework or plans for indigenous peoples will be prepared. Necessary actions favorable to indigenous peoples will be taken through the resettlement framework and resettlement plans. For future subprojects, the SPS will apply.

G. Assumptions and Risks

89. The investment program involves the following assumptions and risks:

- (i) **Shortage of civil works contractors.** The implementation of the proposed airport infrastructure works will be affected by the lack of capable international and national contractors. The Government is fully aware of the issues and is responding by (a) ensuring the safety of international contractors through the provincial governments, (b) improving the licensing and classification of national contractors, and (c) providing opportunities to small and medium-sized enterprises in the construction industry.
- (ii) **Land acquisition and resettlement.** Customary landholding in PNG complicates and prolongs the process of land acquisition. Where required, the CAA will negotiate a memorandum of agreement with the affected clans and communities (local government) to allow the use of land for airport upgrading while the formal acquisition process is fulfilled.
- (iii) **Security.** Security in PNG continues to be an issue with contractors working on ongoing infrastructure projects, including roads. The CAA, with the support of the provincial governments, must deal with this issue.
- (iv) **Institutional capacity.** The investment program needs good institutions. Strong management and governance, good planning, best-practice concepts, sound project management, fiduciary oversight, and transparent bidding and contract management processes require not only experienced personnel but also efficient systems and procedures and controls.
- (v) **Financing.** ADB will provide the necessary funding for capital expenditure, but the main issue in the long run will be maintenance and repairs. For this, there must be a recurrent budget allocation. Budget allocations in the past were haphazard, and, in the continuing economic downturn, economic and financial conditions within and outside the country could deteriorate, thereby restricting growth and development.

V. UNDERTAKINGS AND ASSURANCES

90. **Specific undertakings.** The Government and the CAA have agreed to the following undertakings:

- (i) to implement, monitor, and evaluate the facility in the context of the design and monitoring framework for the facility;
- (ii) to provide its share of funding for the investment program in accordance with the financing plan and the implementation schedule, as well as provide for any cost overruns in excess of the contingencies of this investment program and the projects;
- (iii) for every subproject, to fully implement, as required, the environmental assessment and review framework and the resettlement framework;
- (iv) to ensure that the CAA (a) undertakes annual airport safety audits of all investment program airports, and (b) installs appropriate airport safety facilities during project implementation, including pavement markings, warning signs, and hazard barriers;
- (v) to ensure that the necessary and qualified staff are engaged throughout the investment program period, and that the CAA establishes and implements on a timely basis the operational and financial management system, and awards and manages the long-term maintenance contracts, all with assistance under the investment program;
- (vi) notwithstanding item (ii) above, in the event of any shortfall in maintenance funds, to meet such shortfall from its own budgetary resources, and from a regular review of tariffs, including passenger terminal fees;
- (vii) with the support of the investment program support consultants and resources from other development partners' programs (e.g., the AusAID TSSP), to undertake capacity development for the CAA, Papua New Guinea Air Services Ltd and other affiliated institutions operating in the civil aviation sector;
- (viii) to ensure that a project performance monitoring system for the facility and each tranche is developed, with reports prepared for each tranche; and
- (ix) to ensure that (a) the investment program is carried out in compliance with all applicable PNG anticorruption regulations, and ADB's *Anticorruption Policy*; (b) all staff of the CAA and subsidiary companies are trained in PNG's anticorruption regulations and ADB's *Anticorruption Policy*; and (c) a CAA website is developed and maintained to disclose the audited annual project accounts, project progress, and procurement activities.

91. **Specific assurances.** In addition to the standard assurances, the Government and the CAA have agreed to give the following assurances with respect to project 1, and to include such assurances in the legal documents:

- (i) **Environment.** The Government, through the PIU, will ensure that (a) the investment program is carried out in accordance with the project design, and that construction and operations comply with all the applicable environmental laws of the Government and ADB's *Environment Policy*; (b) the environmental management program (EMP) as presented in the IEE is updated during the final design of the project facility and submitted to ADB for approval before the issuance of relevant bidding documents to any interested civil work contractors; (c) the environmental mitigation measures specified in the EMP are incorporated

into the bidding documents, and the civil works contractor's specifications include requirements to comply with the environmental mitigation measures contained in the EMP; (d) civil works contractors are closely supervised to ensure compliance; (e) the investment program undertakes environment monitoring and reflects the results in the project progress reports and project completion report; (f) adequate environmental management and monitoring training is provided to the environment officer of the CAA to increase his or her capacity for environmental supervision and monitoring during construction and operations; and (g) adequate support is provided to the environment specialist of CAA to ensure that he or she properly undertakes the tasks.

- (ii) **Land acquisition and resettlement.** The Government and CAA will ensure that all investment program civil works for upgrading airports are undertaken within the existing airport boundary to the extent possible. In the event of any unforeseen land acquisition or resettlement needs, the Government will inform ADB and prepare and implement a resettlement plan. The resettlement plans will be prepared in accordance with the program resettlement framework, which complies with the relevant PNG laws and regulations and ADB's *Involuntary Resettlement Policy* (1995). The Government will allocate adequate resources to prepare and implement the resettlement plan and supervise and monitor its implementation. The Government, through CAA, will ensure that (a) land acquisition does not commence before the resettlement plan or due diligence report is reviewed and approved by ADB; (b) civil works do not start until the affected people identified in the resettlement plan or due diligence report have been compensated at replacement value for their losses due to the program; (c) the resettlement plan is updated after the completion of detailed design, agreed on with ADB, and disclosed to the affected people; and (d) all compensation is paid in a legal and transparent manner before taking possession of the acquired land, structures, and other assets. The Government will finance all land acquisition and resettlement costs from its resources.
- (iii) **Gender and development.** CAA will (a) encourage contractors to employ women in airport and market upgrading works such as for management and engineering works, (b) provide equal pay to men and women for work of equal type in accordance with national laws and international treaty obligations, and (c) provide safe working conditions for both male and female workers. Specific provisions to this effect will be included in the bidding documents for civil works. The CAA will review the achievement of hiring women in the project progress reports and project completion report.
- (iv) **Ethnic minorities.** The Government will ensure that the program does not have any adverse impact on the livelihood of ethnic minorities living in the project area. In the event of any unforeseen impact on the livelihood of ethnic minorities, (a) the Government will inform ADB and prepare a plan according to relevant laws and regulations, and ADB's *Policy on Indigenous Peoples*, and (b) civil works will not start until ADB has reviewed and approved the plan.
- (v) **Health risks.** The Government, through the CAA, will ensure that all civil works contractors participate in the STI and HIV prevention program to be funded under the project in the construction campsites. In addition, the CAA will ensure that similar information on the risk of transmission of STI and HIV/AIDS is disseminated at the worksites and local communities, in coordination with national and provincial aids councils and local nongovernment organizations working on the issue. The CAA will include specific provisions to this effect in civil works contracts, and strictly monitor compliance.

- (vi) **Labor laws.** The Government, through the CAA, will ensure that civil works contractors comply with all applicable labor laws and related international treaty obligations, and do not employ child labor or trafficked labor for any activities. The CAA will ensure that specific provisions to this effect are included in civil works contracts, and strictly monitor compliance.
- (vii) **Grievance and redress mechanism.** Within 3 months of the loan effectiveness date, the Government shall establish a complaint and problem management mechanism under a neutral agency acceptable to ADB to (a) review and address grievances of project stakeholders, in relation to the investment program, any of the service providers, or any person responsible for carrying out the investment program; and (b) set the threshold criteria and procedures for handling such grievances, for proactively responding to them, and for providing the stakeholders with notice of the chosen mechanism or action.
- (viii) **Counterpart funding.** The Government will provide, on a timely basis, all funds and resources necessary for upgrading, rehabilitation, maintenance, land acquisition costs, and compensation for assets and management of the project facilities financed under the investment program.
- (ix) **Financial sustainability.** The CAA will put in place specific performance measures to monitor a reduction in expenditure and an increase in cash flow. Specifically, an operating ratio measure and an accounts receivable efficiency measure will be included in the legal documents. The target benchmark for the operating ratio measure will be to achieve a reduction in the FY2008 operating ratio of at least 20% by 2011. The benchmark for the accounts receivable efficiency measure will be no more than 70 days by 2012.

VI. RECOMMENDATION

92. 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 provision of loans under the multitranche financing facility in an aggregate principal amount not exceeding \$480,000,000 equivalent (the facility amount) to Papua New Guinea for the Civil Aviation Development Investment Program comprising:

- (i) loans in various currencies not exceeding the equivalent of \$480,000,000 in Special Drawing Rights from ADB's Special Funds resources, with interest and other terms to be determined in accordance with the then applicable policies relating to Special Funds resources and such other terms and conditions as are substantially in accordance with those set forth in the Framework Financing Agreement presented to the Board, subject to the conditions set out in paragraph 46 of this report; and
- (ii) loans in an aggregate amount not exceeding the balance of the facility amount from ADB's ordinary capital resources, with interest and other terms to be determined in accordance with the ADB's London interbank offered rate (LIBOR)-based lending facility and such other terms and conditions as are substantially in accordance with those set forth in the Framework Financing Agreement presented to the Board.

Haruhiko Kuroda
President

29 October 2009

DESIGN AND MONITORING FRAMEWORK
Table A1.1: Investment Program

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact Economic growth and poverty reduction in project areas</p>	<p>By 2020 5% average annual economic growth in project areas ^a 20% decrease in the number of people below the poverty line in project areas ^b 20% increase in the income of formal and nonformal vendors from visitors in project areas ^c</p>	<p>Development partners' country reports Government socioeconomic monitoring reports Baseline survey and monitoring surveys at inception, midterm, and completion</p>	<p>Assumptions Continued political stability Sufficient incentives for investment and growth in production Risk Deterioration in domestic and external economic and financial conditions, constraining growth and development</p>
<p>Outcome Safer, more efficient, and more accessible all-weather air transport services in the project area</p>	<p>By 2018 (end of MFF) All national airports certified to meet ICAO safety and security standards Seven national airports suitable for larger jet aircraft Growth in passenger demand increased from 3% to 5% annually and in freight demand increased from 1% to 3% annually Airport incidents (delays, diversions, and closures) due to safety or security decreased from an average of 4 per month to 1 per month</p>	<p>ICAO safety and security audit reports CAA technical and annual reports PNGAL, PNGASL, ADL annual reports</p>	<p>Assumptions Government and CAA counterpart funding provided as planned Sustainable financing and execution of maintenance Risk Delay in airline expansion and fleet modernization</p>
<p>Outputs A. Reformed Institutions Sustainable and focused operational units established for airports, air traffic services, property development, and regulatory oversight</p>	<p>By 2018 CAA restructure completed PNGAL, PNGASL, ADL revenues increase from 50% to 75% of operating costs CAA strategy updated at least every 3 years</p>	<p>PNGAL, PNGASL, and ADL annual reports</p>	<p>Assumptions Government support for institutional reforms Proper functioning of the investment program steering committee and project implementation unit Availability of CAA</p>

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
	<p>PNGAL, PNGASL, ADL prepare and implement own projects on schedule and at estimated cost</p> <p>Reduced ICAO audit findings of safety and security noncompliance</p> <p>Airport landing fees, terminal facility charges, and air navigation fees revised and implemented</p>		<p>counterpart staff qualified for program management</p> <p>Adequate counterpart funds and parallel external assistance made available on time</p> <p>Airlines positive response to the civil aviation development program</p> <p>Risks</p> <p>Delayed or incomplete institutional restructuring</p> <p>Delayed passage of the appropriate legislation</p> <p>Limited capacity of CAA for program management</p> <p>Limited availability of capable contractors to complete projects on schedule</p> <p>Delays in preparation and implementation of subsequent projects</p>
<p>B. Improved Infrastructure</p> <p>1. Airside infrastructure meets safety and security certification requirements</p> <p>2. Airside infrastructure and land-side facilities meet future operational and capacity requirements</p> <p>3. Airport maintenance practices improved</p>	<p>By 2018</p> <p>Runways, taxiways, and aprons certified at 14 national airports</p> <p>Safety and security improvements meet ICAO standards at 14 national airports</p> <p>By 2018</p> <p>Runways, taxiways, and aprons at 7 national airports meet airline fleet requirements</p> <p>New airport terminal at Mount Hagen with sufficient facilities for international processing</p> <p>Flight times reduced by an average of 10%</p> <p>By 2018</p> <p>Long-term performance-</p>	<p>Quarterly program reports</p> <p>National statistics</p> <p>PNGAL annual reports</p> <p>ICAO audit reports</p> <p>Quarterly program reports</p> <p>National statistics</p> <p>PNGAL annual reports</p> <p>Quarterly program reports</p>	

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
	based maintenance contracts awarded for 21 national airports		
<p>C. Improved Operations</p> <p>1. Equipment for communications navigation and surveillance equipment modernized to meet air traffic management requirements</p> <p>2. Fire safety and rescue equipment meets operational requirements</p>	<p>By 2018</p> <p>Communications, navigation, and surveillance equipment in 4 national airports certified by ICAO</p> <p>Air traffic management system commissioned at Port Moresby</p> <p>By 2018</p> <p>Ten rescue or fire tenders commissioned at national airports</p>	<p>Quarterly program reports</p> <p>PNGASL annual reports</p> <p>Quarterly program reports</p> <p>PNGASL annual reports</p>	
<p>Activities with Milestones</p> <p>1. Institutional and Sector Reforms</p> <p>1.1 Formation of PNGAL, PNGASL, ADL project management units (2009)</p> <p>1.2 Creation of CAA policy and strategy advisory unit (2010)</p> <p>1.3 Recruitment of consultants (2010–2013)</p> <p>1.4 Completion of national airports strategic management plan (2010)</p> <p>1.5 Completion of CSO policy and review of tariffs (2012)</p> <p>1.6 Completion of restructuring of independent safety regulator (2011)</p> <p>1.7 Implementation of institutional and sector reforms (2009–2018)</p> <p>2. Rehabilitation and Improvement of Remaining 14 National Airports (2012–2017)</p> <p>2.1 Conduct of condition surveys (2009–2014)</p> <p>2.2 Bid document preparation, tendering, and award of contracts (2009–2015)</p> <p>2.3 Implementation of civil works contracts (2011–2018)</p> <p>3. Procurement of Equipment for Navigation, Communication, and Surveillance</p> <p>3.1 Preparation of design and bid documents (2010)</p> <p>3.2 Tendering and award of equipment contracts (2010)</p> <p>3.3 Implementation and commissioning of equipment contracts (2011–2014)</p> <p>4. Consulting Services (design, construction supervision, maintenance planning, and capacity development)</p> <p>4.1 Short-listing of consultants and finalization of requests for proposals (2010–2013)</p> <p>4.2 Evaluation and contract award (2011–2014)</p>			<p>Inputs</p> <p>ADB: \$480.0 million</p> <p>Government/CAA: \$85.0 million</p> <p>Private Sector Participation: \$75.0 million</p>

ADB = Asian Development Bank, ADL = Airport City Development Ltd., CAA = Civil Aviation Authority, ICAO = International Civil Aviation Organization, MFF = multitranché financing facility, PNGAL = PNG Airports Ltd., PNGASL = PNG Air Services Ltd.

^a In accordance with the Government's Medium Term Development Strategy (Government of Papua New Guinea. 2004. *Medium Term Development Strategy 2005–2010*. Port Moresby.)

^b In accordance with the national target for Millennium Development Goals monitoring using the 1996 national average figure of 30% below the lower poverty line as the benchmark figure.

^c Benchmark figures to be determined following the ICAO Universal Safety Oversight Audit Program report (December 2009).

Table A1.2: Project 1

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact Economic growth and poverty reduction in project areas</p>	<p>By 2015 5% average annual economic growth in project areas^a</p> <p>10% decrease in the number of people below the poverty line in project areas^b</p> <p>Increased income of formal and nonformal vendors derived from visitors in project areas by 10%^c</p>	<p>Development partners' country reports</p> <p>Government socioeconomic monitoring reports</p> <p>Baseline survey and monitoring surveys at inception, midterm, and completion</p>	<p>Assumptions Continued political stability</p> <p>Sufficient incentives for investment and growth in production</p> <p>Risk Deterioration in domestic and external economic and financial conditions, constraining growth and development</p>
<p>Outcome Safer, more efficient, and more accessible all-weather air transport services in the project area</p>	<p>By 2013 Five national airports (Gurney, Hoskins, Mount Hagen, Port Moresby, Wewak) certified to meet ICAO safety and security standards</p> <p>Growth in passenger demand increased from 3% to 5% annually and in freight demand increased from 1% to 3% annually</p> <p>Airport incidents (delays, diversions, and closures) due to safety or security decreased from an average of 4 per month to 2 per month</p>	<p>ICAO safety and security audit reports</p> <p>CAA technical and annual reports</p> <p>PNGAL, PNGASL, ADL annual reports</p>	<p>Assumptions Government and CAA counterpart funding provided as planned Sustainable financing and execution of maintenance</p> <p>Risk Delay in airline expansion and fleet modernization</p>
<p>Outputs A. Reformed Institutions Sustainable and focused operational units established for airports, air traffic services, property development, and regulatory oversight</p>	<p>By 2013 CAA restructure completed</p> <p>CAA strategy updated</p> <p>Reduced ICAO audit findings of safety and security noncompliance^c</p>	<p>PNGAL, PNGASL, ADL annual reports</p>	<p>Assumptions Government support for institutional reforms</p> <p>Proper functioning of the investment program steering committee and project implementation unit</p> <p>Availability of CAA counterpart staff qualified</p>

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
			<p>for program management</p> <p>Adequate counterpart funds and parallel external assistance made available on time</p> <p>Airlines' positive response to the civil aviation development program</p> <p>Risks</p> <p>Delayed or incomplete institutional restructuring</p> <p>Delayed passage of the appropriate legislation</p> <p>Limited capacity of CAA for program management</p> <p>Limited availability of capable contractors to complete projects on schedule</p> <p>Delays in preparation and implementation of subsequent projects</p>
<p>B. Improved Infrastructure</p> <p>1. Air-side infrastructure meets safety and security certification requirements</p> <p>2. Air-side infrastructure and land-side facilities meet future operational and capacity requirements</p> <p>3. Airport maintenance practices improved</p>	<p>By 2013 Runways, taxiways, and aprons certified at 5 national airports Safety and security improvements meet ICAO standards at 4 national airports</p> <p>By 2013 New airport terminal at Mount Hagen with sufficient facilities for international processing Flight times reduced by an average of 10%</p> <p>By 2013 Long-term performance-based maintenance contracts awarded for 5 national airports</p>	<p>Quarterly program reports</p> <p>National statistics</p> <p>PNGAL annual reports</p> <p>ICAO audit reports</p> <p>Quarterly program reports</p> <p>National statistics</p> <p>PNGAL annual reports</p> <p>Quarterly program reports</p>	
<p>C. Improved Operations</p> <p>1. Equipment for communications navigation and surveillance equipment modernized to meet air</p>	<p>By 2013 Instrument landing system purchased and commissioned at Port Moresby</p>	<p>Quarterly program reports</p> <p>PNGASL annual reports</p>	

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
traffic management requirements			
2. Fire safety and rescue equipment meets operational requirements	By 2012) Three rescue or fire tenders commissioned at Port Moresby airport	Quarterly program reports PNGAL annual reports	
Activities with Milestones			Inputs
<p>1. Institutional and Sector Reforms</p> <p>1.1 Formation of PNGAL, PNGASL, ADL project management units (2009)</p> <p>1.2 Creation of CAA policy and strategy advisory unit (2010)</p> <p>1.3 Recruitment of consultants (2010–2013)</p> <p>1.4 Completion of national airports strategic management plan (2010)</p> <p>1.5 Completion of restructuring of independent safety regulator (2011)</p> <p>1.6 Implementation of institutional and sector reforms (2009–2013)</p> <p>2. Rehabilitation and Improvement of 7 National Airports, Project 1</p> <p>2.1 Preparation of design and bid documents (2010)</p> <p>2.2. Tendering and award of civil works contracts (2010)</p> <p>2.3 Implementation of civil works contracts (2011–2013)</p> <p>3. Procurement of Equipment for Navigation, Communication, and Surveillance</p> <p>3.1 Preparation of design and bid documents (2010)</p> <p>3.2. Tendering and award of equipment contracts (2010)</p> <p>3.3 Implementation and commissioning of equipment contracts (2011–2013)</p> <p>4. Consulting Services (design, construction supervision, maintenance planning, and capacity development)</p> <p>4.1 Short-listing of consultants and finalization of requests for proposals (2010)</p> <p>4.2 Evaluation and award of contract (2010)</p>			<p>ADB: \$95.0 million</p> <p>Government/CAA: \$17.0 million</p>

ADB = Asian Development Bank, ADL = Airport City Development Ltd., CAA = Civil Aviation Authority, ICAO = International Civil Aviation Organization, PNGAL = PNG Airports Ltd., PNGASL = PNG Air Services Ltd.

^a In accordance with the Government's Medium Term Development Strategy (Government of Papua New Guinea. 2004. *Medium Term Development Strategy 2005–2010*. Port Moresby).

^b In accordance with the national target for Millennium Development Goals monitoring using the 1996 national average figure of 30% below the lower poverty line as the benchmark figure.

^c Benchmark figures to be determined following ICAO Universal Safety Oversight Audit Program report (December 2009).

ANALYSIS OF THE CIVIL AVIATION SECTOR

A. The Transport System

1. Papua New Guinea (PNG) faces very-difficult geographic conditions for the provision of transport because of its rugged terrain and an extreme climate that makes the supply of infrastructure and its sustainable operation very costly. The lack of an extensive and safe road system has led to a significant reliance on aviation as a major transport mode for tourism and business, exports and imports, domestic freight, and social cohesion.

B. Sector Structure

2. Civil aviation supports the socioeconomic development of the country by providing safe, efficient, reliable, sustainable, and affordable aviation services and infrastructure to facilitate access to the country and improve the mobility of communities. The sector is also responsible for meeting its important community service obligations to provide access to noncommercial destinations.

3. Two key institutions administer, regulate, manage, and operate the civil aviation sector. The Department of Works, Transport and Civil Aviation (DWTCA) is the lead agency for transport strategy and planning for all three modes of transport. Its responsibilities include the monitoring of international obligations, the negotiation of air service agreements, economic regulation, the investigation of air accidents, and sector policy and planning. The Civil Aviation Authority (CAA) is the main operational agency. Its responsibilities include airport development and operations, air traffic services, and property development. It is also responsible for safety and security regulation and oversight, which conflicts with its operational responsibilities.

4. The market for air services consists of three major airlines: Air Niugini, Airlines PNG, and Pacific Blue. The three airlines compete on some international routes, but only the first two operate domestic services. Both turboprop and jet aircraft operate on major routes to provincial capitals, but only turboprop aircraft operate on secondary trunk routes. The rural market is predominantly served by small aircraft as a feeder service. Other air operators in PNG provide charters, surveys, flight training, and industry-specific operations.

5. Private sector and government commercial stakeholders include airlines, charter and private air operators, airport concessionaires and tenants, tourist operators, air cargo operators, maintenance organizations, and flight training organizations. Other stakeholders include government agencies responsible for customs, quarantine, immigration, and security; international airline associations; and international organizations responsible for global safety and security monitoring. In addition, PNG is a member of the Pacific Islands Civil Aviation Safety and Security Treaty and uses the Pacific Aviation Safety Office, a nonprofit international organization, for technical services related to safety and security oversight.

C. Key Issues and Constraints

6. Key issues and constraints fall into two areas: infrastructure and finance, and institutions and capacity. In terms of infrastructure, aviation facilities are extensive but capital investment remains inadequate to meet the future needs of the industry, while recurrent expenditure has failed to keep up with maintenance requirements. In terms of institutions, the CAA is undergoing a well-planned restructuring but, because of capacity constraints, is struggling to execute its maintenance and investments to maintain compliance with safety and security standards.

1. Infrastructure and Finance

7. There are more than 450 airports, airfields, and airstrips in PNG. Of this total, there are 21 designated national airports.¹ Most of the major airports and terminal facilities are owned and operated on behalf of the Government by the CAA while the minor airports are owned by provincial governments. There are some remote and district airfields and related facilities, which are privately owned and operated.

8. National airport facilities typically (i) lack safety and security compliance; (ii) have air-side pavements, terminal buildings, equipment, and utilities in poor condition; (iii) have pavements in accelerated deterioration; and (iv) are inadequately maintained. Air navigation systems in PNG are unreliable and deteriorating because of (i) old and obsolete equipment, (ii) lack of spare parts, (iii) theft and vandalism, (iv) unreliable power and communications, and (v) logistics problems.

9. The consequences of poor infrastructure and air navigation services include (i) canceled flights; (ii) restricted operations; (iii) higher costs to airlines due to reduced payload and the need to divert flights; and (iv) higher costs to public and private business due to flight cancellations, rescheduling, and diversions. Airlines face the risk of airport closures and cannot invest in future aircraft types; they may therefore have to reduce capacity into important tourism and economic regions, with consequent adverse effects on the economy and social development.

10. The civil aviation sector derives its funding primarily from Department of Treasury appropriations. DWTCA is entirely funded by the Government, and the CAA by a combination of revenues from airport and airspace fees and charges, licensing and regulatory fees, and annual appropriations from government based on a community service obligation policy in the National Transport Development Plan (NTDP) 2006–2010. These sources have not delivered sufficient or timely funds to arrest the decline in airport and airways infrastructure and equipment.

11. The CAA requires external funding to meet its obligations and execute its strategic plan, as it does not have the financial capacity required to adequately fund safety and security maintenance or the capital investment required for the significant remedial and upgrading work needed to meet both existing and future airport needs. The Government's competing priorities for funds and fiscal strategies have resulted in significant annual underfunding of the CAA over many years.

12. Most external assistance to date has been provided by the Australian Agency for International Development (AusAID) through funding for strategic studies, specialist advisers to the Government and the CAA's small and medium-sized infrastructure projects, and the procurement of equipment. There have been no large investments in the sector from other external sources. The Asian Development Bank (ADB) is currently advising the Government in regard to the establishment of a public–private partnership framework.

¹ Buka, Chimbu, Daru, Goroka, Gurney, Hoskins, Kavieng, Kerema, Kiunga, Madang, Mendi, Momote, Mt Hagen, Nadzab, Popenetta, Port Moresby, Tari, Tokua, Vanimo, Wapenamanda, and Wewak.

2. Institutions and Capacity

13. The aviation sector is facing institutional capacity issues at many levels. The Government's aviation strategies are demanding, but there are insufficient skills and depth of experience in all the delivery areas for successful implementation.

14. The CAA is charged with operating, managing, and developing the national airports. In accordance with government policies to facilitate efficient and effective delivery of services, improve financial performance, and achieve a clear separation of regulatory and operational functions, the CAA is currently undergoing restructuring from CAA to the National Airports Corporation, which will operate as a holding company of three autonomous business units (PNG Airports Ltd. [PNGAL], PNG Air Services Ltd. [PNGASL], and Airport City Development Ltd. [ADL]). All three have been formally established, but only PNGASL has become operational. The CAA's strategic plan calls for the restructuring to be completed in 2009.

15. PNGAL will have responsibilities to commercially operate, manage, and maintain Port Moresby's Jackson's International Airport, and to manage, develop, and operate the other national airports. PNGASL operates as a commercial entity providing air navigation services. ADL is a real estate management, property development, and project management company intended to enhance the financial viability of airports and related infrastructure by developing the business portfolios of the restructured CAA and its subsidiaries.

16. Regulatory oversight of safety and security is currently undertaken by the air safety regulations branch within the CAA. The transition to an independent safety regulator will put more emphasis on the separation of regulatory functions from service delivery, as well as more emphasis on cost recovery and viability. The Government will continue to fund safety regulation through annual statutory grants, offset by service fees and charges. Accident and incident investigations will continue to be undertaken by the DWTC's accident investigation center.

17. A key issue in the transition is the capacity to deliver a final structure and functional capacity that meets the expected outcomes. There is also concern at the effectiveness of the existing structures for coordination and collaboration between the policy functions within DWTC and the business and service delivery functions of the CAA and eventually the National Airports Corporation.

D. Government Policies and Strategies

18. The Government's transport policies are the Medium Term Development Strategy (MTDS) 2005–2010 and the more-detailed NTDP 2006–2010. These documents contain the overarching policies, objectives, and actions that guide the development and operation of the transport sector. Both are currently undergoing review, with completion expected within 2009.

19. The MTDS has seven priorities, importantly including the "rehabilitation and maintenance of transport infrastructure." This particular priority is seen as essential to sustaining trade and access, and underpinning PNG's future development and economic growth and prosperity.

20. The NTDP vision for the aviation sector includes (i) competition on domestic routes and access to these routes by foreign airlines; (ii) the operation of larger aircraft at major national airports; (iii) accessible, safe reliable, efficient, and affordable air transport; (iv) improved and reasonably priced international services to establish PNG as a gateway between continents; and (v) lower-cost and safer passenger and cargo movements. The NTDP has proposed major

investments at six national airports (Gurney, Madang, Mount Hagen, Nadzab, Tokua, and Wewak) to facilitate growth and eventual competition on domestic routes.

21. A key objective of the NTDP is the reform of the CAA to become self-sufficient and fund much of the remedial airport and airways maintenance. The CAA strategic plan was prepared in accordance with the MTDS and NTDP policies and priorities. The key objectives are (i) in the short term, to attend to critical safety and security requirements and implement structural reform; (ii) in the medium term, to facilitate economic and social development through sustainable aviation infrastructure; and (iii) in the long term, to realize an acceptable rate of return on investments.

E. Gaps and Opportunities

22. The main issue for the CAA is to achieve certification of all national airports through targeted investments in rehabilitation, maintenance, and equipment. This work is urgently required to maintain access throughout the country. In the medium term, a second important issue is to upgrade about one-third of the national airports to accept larger aircraft and thereby eliminate transport bottlenecks, accommodate airline expansion investment programs, and enable growth outside of Port Moresby. However, the CAA and its subsidiary units face a clear funding gap in achieving this vision. The investment program will address this funding gap.

23. Related to these issues is the difficulty in achieving the Government's policy for the CAA and subsidiary units to achieve operating cost recovery. In the near term, this is possible only at Port Moresby's Jackson's International Airport, which is also the only airport that would be attractive to private investors, probably via a public-private participation model. A very-limited number of other airports could achieve full operational cost recovery over the investment program period. The rest of the national airports will not be commercially viable and will have a significant negative impact on the CAA's annual financial performance and ability to fund investment programs. The investment program will facilitate economic growth, a commensurate increase in traffic through eventual competition on domestic routes (among other means), regular reviews of landing charges and terminal fees, and prudent operating and capital expenditure to help achieve this objective.

24. On the institutional side, the capacity of the CAA and its subsidiary units to fully implement the planned restructure in an effective and timely manner is still developing. The aviation policies and strategies being pursued by the Government are very demanding in implementation and will involve the successful coordination of a number of stakeholders. There is a resource gap in experienced and qualified staff to meet the Government's objectives. The creation of an independent safety regulator faces similar constraints. Some advisory support for policy development and administration is being provided by AusAID through the Transport Sector Support Program. The investment program will provide continuous strategy and implementation assistance, funded through the loan, to increase ownership, develop capacity, and improve control through government systems.

F. Sector Road Map

25. To put the Government's strategy into operation, the CAA has developed the *Infrastructure Investment Plan-Long Term (2010-2030)*, which has been endorsed by the National Executive Committee as the sector plan. The plan has five main components: (i) safety and security infrastructure requirements for compliance with ICAO standards; (ii) remedial maintenance work to repair air-side pavements and improve infrastructure to provide for unrestricted all-weather services by existing jet aircraft to selected national airports; (iii) improved national airport infrastructure to provide access for future larger and heavier

aircraft; (iv) upgraded air traffic management system, radar, and surveillance equipment for the Port Moresby flight information region and instrument landing systems for the Jackson's International Airport; and (v) sector-wide policy initiatives to support efficient and cost-effective transport of travelers and freight cargo.

26. The required investments for the sector plan from 2010 to 2030 were originally planned by the CAA over 20 years because of financing and capacity constraints. The total required sector investment is estimated at K1.710 billion, as shown in Table A2.1.

Table A2.1: Investment and Maintenance Requirements for National Airports
(K million/\$ million)

Activity	2010– 2011	2012– 2015	2016– 2020	2021– 2025	2026– 2030	Total
Upgrade to B737	260	40	75	75	50	500
Improve to F100	50	110	80	20	30	290
Rehab for Certification	54	46	25	58	142	325
Equipment	24	24	21	10		79
Contingencies	81	47	43	36	47	254
Design and Supervision	85	48	44	36	49	263
Total (K)	554	315	288	234	318	1,710
Total (\$)	177.3	101.0	92.3	75.1	101.9	547.6

Sources: Civil Aviation Authority and Asian Development Bank estimates.

27. According to the CAA, if external assistance can help ease its constraints, the sector plan can be implemented in 9 years, as shown in Table A2.2.

Table A2.2: Sector Plan Components and Sequencing

Phase I	Phase II	Phase III	Phase IV
Port Moresby (domestic apron, air traffic control equipment, fire tenders)	Nadzab (runway upgrade, security fence)	Mount Hagen, Stage 2 (runway upgrade)	Buka (runway repair)
Mount Hagen, Stage 1 (runway repair, new terminal)	Madang (runway repair)	Wewak Stage 2 (runway upgrade)	Madang Stage 2 (runway upgrade)
Hoskins Stage 1 (runway repair, security fence)	Kavieng (runway repair)	Hoskins Stage 2 (runway upgrade)	Gurney Stage 2 (runway upgrade)
Wewak Stage 1 (runway repair, security fence)	Goroka (runway repair)	Chimbu (runway repair)	Girua (runway repair)
Gurney Stage 1 (runway repair, security fence)	Tokua (runway repair)	Kiunga (runway repair)	Mendi (runway repair)
Kavieng (security fence)	Momote (security fence)	Vanimo (runway repair)	Kieta (runway repair)
Goroka (security fence)			Wapenamanda (runway repair)
			Kerema (runway repair)
			Daru (runway repair)

Source: Civil Aviation Authority.

G. ADB's Strategy

28. ADB's country assistance strategy² supports the implementation of the Government's MTDS 2005–2010, in which the transport sector is one of four main strategic areas for ADB engagement. The NTDP 2006–2010 articulates goals for the sector including maintenance, rehabilitation, and improved infrastructure for roads, ports, and airports; and adherence to minimum safety standards. Another key issue is the reform of state-owned enterprises, including the CAA. The restructuring of the CAA is under way, and can be consolidated through implementation assistance and technical assistance for capacity building.

29. As proposed, the Civil Aviation Development Investment Program will finance about 85% of the sector plan. It will address financing and capacity constraints so that the urgent airport improvements can be implemented fully within the planned program duration of 9 years. The proposed sequencing of works matches the CAA's priorities in the sector plan. The investment program is included in the updated Country Operations Business Plan 2009–2011.³

30. The investment program is proposed for financing under ADB's multitranche financing facility (MFF). This financing modality suits the investment program because it (i) supports the Government's and the CAA's long-term vision for the sector, (ii) responds to long-term investment and capacity development needs, (iii) enables a long-term partnership to consolidate sector reforms, (iv) provides flexibility in timing and investment size for each tranche, (v) provides an opportunity to apply lessons from early tranches to guide subsequent tranches and improve incentives for reforms and implementation efficiency, and (vi) provides increased certainty to private companies interested in pursuing long-term opportunities in the aviation sector.

H. Expected Outcomes and Indicators

31. The expected impact of the investment program will be a civil aviation sector that supports the MTDS 2005–2010 objectives of (i) economic growth, (ii) rural development, (iii) poverty reduction, and (iv) human resource development. The outcomes of the program will be infrastructure and supporting institutions for civil aviation that are accessible, safe, reliable, and cost-effective. The performance targets are (i) 21 national airports rehabilitated and certified to meet ICAO safety and security standards by 2018, (ii) 7 national airports improved and capacity increased to accommodate larger aircraft and meet future transport needs, and (iii) the completed upgrading of the air traffic management systems and installation of surveillance and navigation aid equipment.

² ADB. 2006. *Country Strategy and Program (2006–2010): Papua New Guinea*. Manila; and ADB. 2007. *Country Operations Business Plan (2008–2010): Papua New Guinea*. Manila.

³ ADB. 2009. *Country Strategy and Program Midterm Review (2006–2010): Papua New Guinea* (Appendix 1). Manila.

SECTOR ROAD MAP AND POLICY FRAMEWORK

Policy Objectives and Initiatives	Issues	Actions Taken by the Government, CAA, and Development Agencies	Actions to be Taken under the Investment Program	Outcomes and Status
<p>National Development NTDP objective: “contribute to economic and social security and development in the country”</p> <p>Initiative: Civil aviation sector structure, governance, and investments to be directed in accordance with national economic development priorities</p>	<p>DWTCA still developing capacity for effective policy coordination and collaboration with the business and service delivery functions of the CAA</p> <p>CAA still developing structure, experience, and expertise to deliver efficient services and facilities</p>	<p>Implementation of existing MTDS and NTDP (Government)</p> <p>Updating of National Transport Strategy, Medium Term Transport Plan, and National Airports Strategic Management Plan (ADB, Government, TSSP)</p> <p>Review of network coverage and assistance to provinces in improving funds allocation (Government, ADB)</p> <p>Restructuring of CAA and establishment of PNGAL, PNGASL, and ADL to improve viability (Government)</p> <p>Capacity building for CAA in corporate planning and policy, financial management, organizational development (TSSP)</p> <p>Capacity building for DWTCA to improve monitoring and coordination (TSSP)</p>	<p>Implementation assistance to CAA for program management (continuous, 2009–2018)</p> <p>Provision of services of corporate strategy adviser (intermittent, 2010–2011)</p> <p>Provision of services of commercialization adviser (intermittent, 2010–2011)</p>	<p>Establishment of clear guidelines for investment program</p> <p>Economic efficiency gains from reduced user costs in relation to investment costs</p> <p>Reduction in user costs lowers producer costs for transport of inputs and goods for export</p> <p>Lower barriers for private sector participation in maintenance and construction</p> <p>Higher government revenues through growth in transport demand</p> <p>Poverty reduction</p>

Policy Objectives and Initiatives	Issues	Actions Taken by the Government, CAA, and Development Agencies	Actions to be Taken under the Investment Program	Outcomes and Status
<p>Transport Access NTDP objectives: (i) “provide access to transport facilities for all people all year round,” and (ii) “creat(e) new transport infrastructure to enhance the efficient production and distribution of goods and services”</p> <p>Initiatives:(i) provide access in all provinces to health, education, employment opportunities, markets for produce, and other government services to promote prosperity, social cohesion, and inclusion; and (ii) improve and extend the transport network in line with government policy objectives where economically feasible and consistent with maintenance obligations and funding constraints</p>	<p>Capacity constraints due to deteriorated and undersized airport facilities</p> <p>Government priorities are to (i) maintain existing facilities as a priority; (ii) improve, rehabilitate, or provide only when economically justified; and (iii) conduct business on a “safety and security first” basis</p>	<p>CSO policy and capacity building for DWTCA to develop and implement policy and program (TSSP)</p> <p>Small-scale infrastructure program (TSSP)</p>	<p>Implementation assistance to CAA to plan and manage airports to increase capacity and meet market demand (continuous, 2009–2018)</p> <p>Implementation assistance to CAA for design and supervision (continuous, 2009–2018)</p> <p>Advisory support for tariff reviews (landing charges and terminal fees, 2010–2013)</p>	<p>Improved access to health, education, and other public services</p> <p>Increased opportunities for economic participation</p> <p>Traffic growth increases revenue of CAA and subsidiaries</p>
<p>Safety and Security NTDP objectives: “improve transport safety and security; ensur(e) adherence to minimum safety standards and practices”</p> <p>Initiative: improve safety design and reduce</p>	<p>Some airports are not certified because of facility limitations</p> <p>The air safety regulator is struggling to maintain compliance with ICAO safety and security standards because of resource limitations and</p>	<p>Separation of safety oversight from service delivery (Government and TSSP)</p> <p>TA supporting safety and security oversight (TSSP)</p> <p>Support for small airport</p>	<p>Implementation assistance to CAA in planning and managing safety compliance program (continuous, 2009–2018)</p> <p>Corporate strategy adviser to assist with restructure of CAA and establishment of independent safety</p>	<p>Compliance and certification</p> <p>Reduced safety and security incidents</p> <p>Reduced losses to the economy</p>

Policy Objectives and Initiatives	Issues	Actions Taken by the Government, CAA, and Development Agencies	Actions to be Taken under the Investment Program	Outcomes and Status
fatalities and injuries; improve security for female passengers using the transport system	lack of independence Conflict between regulatory oversight and service delivery	works to meet compliance shortfalls (TSSP) Capacity building for safety and security inspection and audit (TSSP) Policy development to improve safety and security (TSSP) Access to regional expertise through Pacific Aviation Safety Office	regulator (intermittent, 2010–2011)	
<p>Maintenance of Assets NTDP objective: “maintaining, rehabilitating and improving the existing transport infrastructure”</p> <p>Initiative: protect and maintain assets to an optimal level consistent with funding</p>	<p>Inadequate funding of maintenance is causing deterioration of airport facilities nationwide</p> <p>Operating and maintenance costs are not being recovered</p>	<p>Establishment of asset management system (TSSP)</p> <p>Review and optimization of aeronautical fees and charges plus increased focus on non-aviation commercial income to support the achievement of sustainable operations (TSSP)</p>	<p>Long-term performance-based maintenance contracts</p> <p>Capacity development to ensure sustainable maintenance</p>	<p>21 national airports returned to maintainable condition</p> <p>Long-term performance-based maintenance contracts established</p>
<p>Strengthening the Private Sector NTDP objective: “encouraging the expanded and efficient provision of transport facilities and services by private sector operators”</p> <p>Initiative: harness and develop private sector</p>	<p>There is not much private sector participation in the sector</p> <p>Opportunities for public private partnerships are not being developed</p>	<p>Master plan for Port Moresby’s Jacksons International Airport (TSSP)</p> <p>National Airports Strategic Management Plan (TSSP)</p> <p>PPP framework (ADB)</p>	<p>Maintenance works contracted out to the private sector to provide an opportunity to national contractors and consulting firms (continuous, 2009–2018)</p> <p>Services of commercialization adviser for property development</p>	<p>Financial security of longer contracts stimulates contractors to invest in their businesses and attracts new entrants</p> <p>More competent contractors, better implementation, and more cost-effective construction works</p>

Policy Objectives and Initiatives	Issues	Actions Taken by the Government, CAA, and Development Agencies	Actions to be Taken under the Investment Program	Outcomes and Status
resources for funding, delivery, operation, and maintenance of transport services, with an emphasis on PNG firms and individuals			and non-aeronautical revenue projects (intermittent 2010–2011)	<p>Skills development in managing performance-based maintenance contracts</p> <p>Government shifts performance risk to the private sector</p> <p>Increased competition and lower risk premium on contract bids</p>
<p>Institutional Strengthening and Capacity Development NTDP objective: “the CAA is responsible for meeting the present and future needs of the air transport industry on a commercial basis”</p> <p>Initiative: strengthening of the CAA to better manage air safety regulations, air traffic, and air navigational services and facilities</p>	<p>Institutional structure is not well suited to efficient service delivery</p> <p>Strategic, technical, and managerial capacity is insufficient</p> <p>Policy coordination between Government and CAA is weak</p>	<p>The CAA is being restructured into a holding company with four subsidiaries for airports, air services, property, and regulation</p> <p>Advisory support for administration and policy (TSSP)</p>	<p>Services of corporate strategy adviser to assist in the restructuring of CAA (intermittent, 2010–2011)</p> <p>Implementation assistance for project development and management (continuous, 2009–2018)</p> <p>Capacity development integrated into terms of reference for implementation assistance (continuous, 2009–2018)</p>	<p>Completion of the CAA restructuring, producing an efficient operating structure</p> <p>Optimal cost recovery</p> <p>Projects prepared and implemented on time and within budget</p>

ADB = Asian Development Bank; ADL = Airport City Development Ltd.; CAA = Civil Aviation Authority; CSO = community service obligation; DWTCA = Department of Works, Transport and Civil Aviation; ICAO = International Civil Aviation Organization; MTDS = medium term development strategy; NTDP = National Transport Development Plan; PNG = Papua New Guinea; PNGAL = PNG Airports Ltd.; PNGASL = Papua New Guinea Air Services Ltd.; PPP = public-private partnership; TSSP = Transport Sector Support Program.

Source: Asian Development Bank.

DETAILED COST ESTIMATES FOR THE INVESTMENT PROGRAM
SUMMARY BY PROJECT (\$ million)

Item	Project 1	Project 2	Project 3	Project 4	Total			
A. Base Costs^{a, b}								
1. Airport Improvements: Port Moresby Domestic Apron	5.7	Nadzab	41.0	Mount Hagen, Stage 2	30.7	Buka	18.2	
2. Airport Improvements: Mount Hagen, Stage 1	29.9	Madang Stage 1	23.4	Wewak Stage 2	27.5	Madang Stage 2	23.4	
3. Airport Improvements: Hoskins Stage 1	15.5	Kavieng	16.9	Hoskins Stage 2	28.7	Gurney Stage 2	17.7	
4. Airport Improvements: Wewak Stage 1	10.2	Goroka	13.7	Chimbu	7.3	Girua	7.3	
5. Airport Improvements: Gurney Stage 1	6.2	Tokua	20.6	Kiunga	7.3	Mendi	7.3	
6. Airport Improvements: Hoskins Security Fence	1.7	Momote Fence	1.9	Vanimo	7.3	Kieta	7.3	
7. Airport Improvements: Wewak Security Fence	1.7	Nadzab Fence	2.0	Subtotal	108.7	Wapenamanda	7.3	
8. Airport Improvements: Kavieng Security Fence	1.7	Subtotal	119.6			Kerema	7.3	
9. Airport Improvements: Gurney Security Fence	1.7					Daru	7.3	
10. Airport Improvements: Goroka Security Fence	1.6					Subtotal	103.1	
11. Airport Improvements: Port Moresby Instrument Landing System	1.8	CNS/ATM	5.5	CNS/ATM	9.1	ATM	3.6	
12. Airport Improvements: Port Moresby Fire Tenders	3.2	2 Fire Tenders	1.8	3 Fire Tenders	2.7	2 Fire Tenders	1.8	
13. Program Support and Capacity Development	8.8		6.0		6.0		13.6	
14. Program Administration and Other Costs (first three years)	6.3		0.0		5.3		5.3	
15. Subtotal (A)	96.0		132.9		131.8		127.4	488.1
B. Contingencies^c	11.9		16.6		15.7		15.1	59.3
C. Financing Charges during Implementation^d	4.1		4.5		4.5		4.5	17.6
Total (A+B+C)	112.0		154.0		152.0		147.0	565.0
		ADB Loan						480.0
		85% of Total						125.0
		Government Financing						22.0
								85.0

ADB = Asian Development Bank; CNS/ATM = communications, navigation and surveillance systems for air traffic management.

^a In 2009 prices.

^b Includes taxes and duties (10% of base cost) of \$8.5 million.

^c Physical contingencies computed at 10%. Price contingencies computed at an average of 1.9% on foreign exchange costs and 4.0% of local currency costs.

^d Includes interest charges.

Note: Numbers may not sum precisely because of rounding.

Sources: Civil Aviation Authority and Asian Development Bank estimates.

DETAILED COST ESTIMATES AND FINANCING PLAN FOR PROJECT 1

Item	Total \$ ^a	OCR	ADF (hard)	ADF (soft)	ADB \$ ^b	Govt. \$ ^c	Share	
							ADB	Govt.
A. Investment Costs								
1. Civil Works								
a. Port Moresby domestic apron extension	5.7	1.2	1.0	2.5	4.7	1.0	82%	18%
b. Mt. Hagen improvements for F100 and new terminal	30.0	6.5	5.2	13.2	24.9	5.1	83%	17%
c. Hoskins improvements for F100	15.5	3.4	2.7	6.8	12.9	2.6	83%	17%
d. Wewak improvements for F100	10.2	2.2	1.8	4.5	8.5	1.7	83%	17%
e. Gurney improvements for F100	6.2	1.4	1.1	2.7	5.2	1.0	84%	16%
f. Hoskins security fence	1.7	0.4	0.3	0.7	1.4	0.3	82%	18%
g. Wewak security fence	1.7	0.4	0.3	0.7	1.4	0.3	82%	18%
h. Kavieng security fence	1.7	0.4	0.3	0.7	1.4	0.3	82%	18%
i. Gurney security fence	1.7	0.4	0.3	0.7	1.4	0.3	82%	18%
j. Goroka security fence	1.6	0.3	0.3	0.7	1.3	0.3	81%	19%
2. Goods								
a. Port Moresby Instrument Landing System	1.7	0.4	0.3	0.8	1.5	0.2	88%	12%
b. Port Moresby 3 Fire Tenders	3.2	0.8	0.6	1.5	2.9	0.3	91%	9%
3. Consultancy Services								
a. Project Implementation Unit (first 3 years)	5.9	1.4	1.1	2.8	5.3	0.6	90%	10%
b. Design and construction supervision	5.9	1.4	1.1	2.8	5.3	0.6	90%	10%
c. Survey and Geotechnical investigation (first 3 years)	1.0	0.2	0.2	0.5	0.9	0.1	90%	10%
d. Operational and Facility Enhancement Program CAA	1.7	0.4	0.3	0.8	1.5	0.2	88%	12%
f. Accounting and external audits (first 3 years)	0.4	0.1	0.1	0.2	0.4	0.0	100%	0%
Subtotal (A) Base Cost	95.8				80.9	14.9		
B. Contingencies ^c	12.0	2.6	2.1	5.2	9.9	2.1	83%	18%
C. Interest During Construction (IDC) ^d	4.2	1.1	0.9	2.2	4.2	0.0	100%	0%
Total Project Cost^{a b}	112.0	25.0	20.0	50.0	95.0	17.0	85%	15%

ADB = Asian Development Bank, ADF = Asian Development Fund, CAA = Civil Aviation Authority, Govt = Government, OCR = ordinary capital resources.

Notes: 1. Loan amount as percentage of total project cost.

2. Numbers may not sum precisely because of rounding.

^a In 2009 prices.

^b Includes taxes and duties (10% of base cost) of \$8.5 million.

^c Physical contingencies computed at 10%. Price contingencies computed at an average of 1.9% on foreign exchange costs and 4.0% of local currency costs.

^d Includes interest charges.

Sources: CAA and ADB estimates.

LIST OF POTENTIAL AIRPORTS FOR SUBSEQUENT PROJECTS AND SELECTION CRITERIA

A. List of Airports

1. There are 21 national airports in Papua New Guinea, including Port Moresby International Airport.

Table A6: List of Airports

Item	Airport	Province	Item	Airport	Province
1.	Buka	North Solomons	12.	Mendi	Southern Highlands
2.	Chimbu	Simbu	13.	Momote	Manus
3.	Daru	Western	14.	Mount Hagen	Western Highlands
4.	Goroka	Eastern Highlands	15.	Popendetta	Oro
5.	Gurney	Milne Bay	16.	Port Moresby	NCD
6.	Hoskins	West New Britain	17.	Tari	Southern Highlands
7.	Kavieng	New Ireland	18.	Tokua	East New Britain
8.	Kerema	Gulf	19.	Vanimo	Sandaun
9.	Kiunga	Western	20.	Wapenamanda	Enga
10.	Lae (Nadzab)	Morobe	21.	Wewak	East Sepik
11.	Madang	Madang			

NCD = National Capital District.

Source: Civil Aviation Authority.

B. Selection Criteria

2. Selection criteria have been proposed, to assist in identifying appropriate aviation facilities for future projects. A candidate facility should

- (i) be owned by the national Government and operated by the Civil Aviation Authority;
- (ii) be associated with an existing or former national airport or air traffic management/communication navigation system (airport; airport infrastructure item related to safety, security, or passenger facilitation; equipment; communication or navigation aid);
- (iii) meet the required 12% economic internal rate of return for the proposed investment on airport improvement;
- (iv) not duplicate operations of an airport that is already part of the investment program (if some diversion of existing traffic is expected, the impact on the viability of the existing route must be taken into account in the analysis);
- (v) conform with government planning and financing strategies for the civil aviation sector;
- (vi) have the approval of the local population, and the district and provincial administrations;
- (vii) be on government land, or an agreement with the affected community allows (a) the use of land for airport improvement works initially, and (b) the acquisition of land after the necessary procedures and payment of required compensation;
- (viii) not endanger at-risk flora; and
- (ix) not have any other significant adverse environmental or social impact.

IMPLEMENTATION SCHEDULE FOR PROJECT 1 AND INVESTMENT PROGRAM

Table A7.1: Project 1

Year	2009		2010				2011				2012				2013			
Batch 1 Activities	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A. Civil Works Contract Packages																		
1. Port Moresby Domestic Apron																		
Investigation and Detailed Design		■																
Procurement of Civil Works	■	■																
Implementation			■	■														
2. Mount Hagen Improvements for F100 and New Terminal																		
Investigation and Detailed Design							■	■										
Procurement of Civil Works								■	■									
Implementation										■	■	■	■	■	■	■		
3. Hoskins Improvements for F100																		
Investigation and Detailed Design				■	■													
Procurement of Civil Works							■	■										
Implementation									■	■	■	■	■	■	■	■		
4. Wewak Improvements for F100																		
Investigation and Detailed Design									■	■								
Procurement of Civil Works										■	■							
Implementation											■	■	■	■	■	■	■	■
5. Gurney Improvements for F100																		
Investigation and Detailed Design										■	■							
Procurement of Civil Works											■	■						
Implementation												■	■	■	■	■	■	■
6. Hoskins Security Fence																		
7. Wewak Security Fence																		
8. Kavieng Security Fence		■	■															
9. Gurney Security Fence																		■
10. Goroka Security Fence																		■
B. Goods																		
1. Port Moresby Instrument Landing System																		
Scoping	■																	
Procurement		■																
Implementation – Delivery and Installation				■														
2. Port Moresby 3 Fire Tenders																		
Scoping	■																	
Procurement		■																
Implementation – Delivery and Installation				■														
C. Consulting Services																		
1. PIU																		
Procurement of Consulting Service	■	■																
Consulting Services			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2. Design and Supervision																		
Procurement of Consulting Service	■	■											■	■				
Consulting Services			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3. Survey and Geotechnical Investigations																		
Procurement of Consulting Service	■																	
Consulting Services		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Sources: Civil Aviation Authority and Asian Development Bank estimates.

PROCUREMENT PLAN

Basic Data

Project Name: Civil Aviation Development Investment Program	
Country: Papua New Guinea	Executing Agency: Civil Aviation Authority
Total Cost of Investment Program: \$565 million equivalent	Loan (Grant) Number: Project Number 43141
Multitranche Financing Facility Loan Facility: \$480 million equivalent	
Total Cost of Project 1: \$112 million equivalent	
Date of First Procurement Plan: 9 October 2009	Date of this Procurement Plan: 9 October 2009

A. Process Thresholds, Review, and 18-Month Procurement Plan

1. Project Procurement Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works	
Method	Threshold
International Competitive Bidding (ICB) for Works	>\$3 million
ICB for Goods	>\$500,000
National Competitive Bidding (NCB) for Works	≤\$3 million
NCB for Goods	≤\$500,000
Shopping for Goods	<\$100,000

2. ADB Prior or Post Review

2. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
ICB Works	Prior	
ICB Goods	Prior	
NCB Works	Post	
NCB Goods	Post	
Shopping for Goods	Post	
Recruitment of Consulting Firms		
Quality- and Cost-Based Selection (QCBS)	Prior	(80:20)
Recruitment of Individual Consultants		
Individual Consultants	Prior	

3. Goods and Works Contracts Estimated to Cost More Than \$1 Million

3. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value	Procurement Method	Prequal of Bidders	Advertisement Date	Comments
A. Goods					
1. Port Moresby Instrument Landing System	2.0	ICB	Y	Q1/2010	Procurement by Papua New Guinea Air Services Ltd
2. Port Moresby 3 Fire Tenders	3.6	ICB	Y	Q2/2010	Procurement by the Civil Aviation Authority (CAA)
B. Works					
1. Port Moresby domestic apron extension	6.4	ICB	Y	Q4/2009	Design and construction supervision by CAA
2. Mount Hagen improvements for F100 and new terminal	33.5	ICB	Y	Q4/2010	
3. Hoskins improvements for F100	17.3	ICB	Y	Q3/2010	
4. Wewak improvements for F100	11.4	ICB	Y	Q4/2010	
5. Gurney improvements for F100	6.9	ICB	Y	Q3/2020	
6. Hoskins security fence	1.9	NCB	-	Q1/2010	Design and construction supervision by CAA
7. Wewak security fence	2.0	NCB	-	Q1/2010	Design and construction supervision by CAA
8. Kavieng security fence	2.0	NCB	-	Q1/2010	Design and construction supervision by CAA
9. Gurney security fence	1.9	NCB	-	Q1/2010	Design and construction supervision by CAA
10. Goroka security fence	1.8	NCB	-	Q1/2010	Design and construction supervision by CAA

4. Consulting Services Contracts Estimated to Cost More Than \$100,000

4. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value	Recruitment Method ¹	Advertisement Date (quarter/year)	International or National Assignment	Comments
1. Design and Supervision	6.7	QCBS: (80:20)	Q3/2009	International	
2. Survey and Geotechnical Investigations	1.1	QCBS: (80:20)	Q4/2009	National	For subprojects in project 1 – 3 and in first 3 years
3. CAA Operations Training Program	2.1	QCBS: (80:20)	Q2/2010	International	
4. Project Implementation Unit Consultants	6.7	Individual Consultant Selection	Q3/2009	International	For first 3 years
5. Accounting and External Audits	0.3	QCBS: (80:20)	Q1/2010	National	For first 3 years

5. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000

5. The following table groups smaller-value goods, works and consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Value of Contracts (cumulative)	Number of Contracts	Procurement / Recruitment Method ¹	Comments
nil				

B. Indicative List of Packages Required Under the Project

6. The following table provides an indicative list of all procurement (goods, works, and consulting services) over the life of the project. Contracts financed by the Borrower and others should also be indicated, with an appropriate notation in the comments section.

General Description	Estimated Value (cumulative) (\$million)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Goods	27.4	6	ICB	0	Aviation equipment, Fire Tenders
Works	371.4	22	ICB	0	Airport infrastructure

General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Type of Proposal	Comments
Consulting Services	40.6	7	QCBS 80:20	Full	Construction supervision

C. National Competitive Bidding

7. **General.** National competitive bidding (NCB) shall conform to the provisions set in the Public Financial Management Act (PFMA) as issued in 1995 and amended in 2003, and the specific procedures prescribed in the Financial Instructions (FIs) issued in 2005, with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of ADB's Procurement Guidelines (2007, as amended from time to time).

8. Participation in bidding

- (i) Government-owned enterprises in Papua New Guinea shall be eligible to bid only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the Borrower and or Executing Agency.
- (ii) Foreign bidders shall be eligible to participate in bidding under the same conditions as national bidders.
- (iii) Bidding shall not be restricted to preregistered firms and such registration shall not be stated in the bidding documents as a condition for the submission of bids. Where registration is required prior to award of contract, bidders: (a) shall be allowed a reasonable time to complete the registration process; and (b) shall not be denied registration for reasons unrelated to their capability and resources to successfully perform the contract, which shall be verified through post-qualification.

9. Classification of contractors; qualification; post-qualification

- (i) Post qualification shall be used unless prequalification is explicitly provided for in the loan agreement/procurement plan.
- (ii) Bidding shall not be restricted to any particular class of contractors, and non-classified contractors shall also be eligible to bid. Qualification criteria (in case prequalification was not carried out) shall be stated in the bidding documents, and before contract award, the bidder having submitted the lowest evaluated responsive bid shall be subject to post-qualification.

10. **Conflict of interest.** Bidders may be considered to be in conflict of interest with one or more parties in this bidding process if, including but not limited to:

- (i) They have controlling shareholders in common.
- (ii) They receive or have received any direct or indirect subsidy from any of them.

- (iii) They have the same legal representative for purposes of this bid.
- (iv) They have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid or another bidder, or influence the decisions of the employer regarding this bidding process.
- (v) A bidder participates in more than one bid in this bidding process. Participation by a bidder in more than one bid will result in the disqualification of all Bids in which the party is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid.
- (vi) A bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract is the subject of the bid.
- (vii) A bidder, or any of its affiliates, has been hired (or is proposed to be hired) by the employer or borrower as engineer for the contract.

11. **Preferences.** No preference shall be given for domestic bidders and for domestically manufactured goods.

12. **Advertising, time for bid preparation**

- (i) Invitations to bid shall be advertised in at least one newspaper of national circulation or freely accessible and well-known website, allowing a minimum of 4 weeks for the preparation and submission of bids, such 4 weeks period to begin with the availability of the bid documents or the advertisement, whichever is later.
- (ii) Bidding of NCB contracts estimated at \$500,000 or more for goods and related services, or \$1,000,000 or more for civil works, shall be advertised on ADB's website via the posting of the procurement plan.

13. **Standard bidding documents.** Until national standard bidding documents approved by ADB are available, bidding documents acceptable to ADB should be used.

14. **Bid security.** If required by the bidding documents, bid security shall be in the form of a bank guarantee from a reputable bank. A bidder's bid security shall apply only to a specific bid.

15. **Bid opening and bid evaluation**

- (i) Bidders may deliver bids, at their option, either in person or by courier service or by mail.
- (ii) Bidders shall not be allowed to amend their tenders after the closing date and time for submission of bids.
- (iii) Bids shall be opened in public, immediately after the deadline for submission of bids. No bid shall be rejected during bid opening. The name of the bidder, the total amount of each bid, and any discounts shall be read aloud and recorded in the minutes of the public bid opening.
- (iv) Evaluation of bids shall be made in strict adherence to the qualifications and evaluation criteria stipulated in the bidding documents
- (v) No bidder shall be rejected merely on the basis of a comparison with the employer's estimate and budget ceiling without ADB's prior concurrence.
- (vi) The contract shall be awarded to the technically responsive bidder that offers the lowest evaluated price, and meets the qualifying criteria. In determining the lowest evaluated price, the following are to be considered: (a) bid price, as offered; (b)

arithmetical corrections on the bid price, if any; and (c) monetary value of the evaluation criteria that are stated in the bidding document.

16. **Rejection of bids.** Bids shall not be rejected and new bids solicited without ADB's prior concurrence.

17. **Extension of the validity of bids.** In exceptional circumstances and with prior ADB approval, the procuring entity may, before the expiration of bid validity, request all bidders in writing to extend the validity of their bids. In such a case, bidders shall not be requested nor permitted to amend the price or any other condition of their bid. Bidders shall have the right to refuse to grant such an extension without forfeiting their bid security, but bidders granting such an extension shall be required to provide a corresponding extension of their bid security.

18. **Disclosure on contract awards.** At the same time that notification on award of contract is given, the Borrower/Executing Agency/Implementing Agency shall publish the following information on contract award on a free and open access website or other means of publication acceptable to ADB: (i) name of each bidder who submitted a bid; (ii) bid prices as read out at bid opening; (iii) name and evaluated price of each bid that was evaluated; (iv) names of bidders whose bids were rejected and the reasons for the rejection; and (v) name of the winning bidder, price it offered as well as the duration and summary scope of the contract awarded. The Executing/Implementing Agency shall respond in writing to unsuccessful bidders who seek explanations on the grounds on which their bids are not selected.

19. **No negotiations.** There shall be no negotiations, even with the lowest evaluated bidder, without ADB's prior concurrence. A bidder shall not be required, as a condition of award, to undertake obligations not specified in the bidding documents, or otherwise, to modify the bid as originally submitted.

20. **Inspection and auditing.** Each contract financed from the proceeds of a loan and or grant shall provide that the contractor and or supplier shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.

21. **Member country restrictions.** Bidders must be nationals of member countries of ADB, and offered goods must be produced in and supplied from member countries of ADB.

ECONOMIC ANALYSIS OF PROJECT 1 AIRPORTS

A. Introduction

1. Air transport plays a vital role in the economic and social development of Papua New Guinea (PNG) because of the mountainous terrain of vast areas of the inland regions of the country, where road access between communities is difficult, and the numerous islands throughout the country, where coastal and interisland shipping services are infrequent and involve long journey times. In addition to accessibility to government, health, community, and law-and-order services, airports are increasingly providing access to mobile communications facilities required to provide reliable service throughout the country.

2. The deterioration of airport infrastructure and ground navigation aids in the last decade has begun to affect the PNG economy by increasing air service operating costs and reducing the safety of air services. Failure to reverse these adverse trends will lead to restrictions on some airport operations, the provision of air services by smaller aircraft, a reduction in air service frequency, and in some cases the cessation of regular passenger transport (RPT) operations into the worst-affected airports.

3. The investment program will help PNG address its need for continuous domestic air service operations to its dispersed communities and for mobile communications infrastructure through urgently needed upgrading and improvements in the highest-priority airports. Aviation sector safety in compliance with International Civil Aviation Organization standards will be improved and regional economic growth stimulated through construction activity and economic growth in local communities.

B. Traffic Forecasts

4. Domestic RPT air services are provided by two air service operators—Air Niugini (ANG) and Airlines of Papua New Guinea (APNG). ANG, the dominant operator, uses 5 Fokker 100 (F100) planes, a 100-seat regional jet aircraft, and 8 De Havilland DHC-8 (Dash 8) turboprop regional airliners, seating 30–40 passengers in the 100 and 200 series aircraft and 50 passengers in the stretched 300 series. APNG operates a fleet of 15 Dash 8 aircraft, including 8 of the smaller 100 and 200 series and 7 of the stretched 300 series.

5. Route traffic records are maintained essentially for aviation sector fee charging purposes, and aggregation of the data for statistical purposes is limited. Data were aggregated for ANG and APNG, which represent some 54% of aircraft movements, and a higher 90% of passengers and freight handled through the seven project 1 airports. The aggregated data are considered to provide a reliable trend pattern for traffic forecasting. Table A9.1 outlines past air traffic statistics.

Table A9.1: Air Niugini Traffic Statistics

Item	2005	2006	2007	2008	2009 Est. ^a
Aircraft Movements					
Goroka	9,107	9,307	8,304	8,488	8,500
Gurney	1,811	1,867	1,589	1,690	1,950
Hoskins	4,530	4,343	3,866	2,965	3,000
Kavieng	1,613	1,725	1,533	1,849	1,950
Mount Hagen	14,209	15,645	14,748	14,804	15,000
Port Moresby	30,993	33,514	34,054	36,189	37,000
Wewak	6,656	6,002	6,840	4,538	6,800

Item	2005	2006	2007	2008	2009 Est. ^a
Passengers^b					
Goroka	47,754	44,372	46,143	45,258	54,100
Gurney	29,273	32,268	35,490	38,539	46,000
Hoskins	90,203	100,336	26,849	33,581	50,581
Kavieng	30,288	31,691	19,721	24,093	44,000
Mount Hagen	95,203	103,038	105,736	113,602	152,000
Port Moresby	586,583	640,552	733,531	1,020,187	1,219,000
Wewak	47,658	55,229	31,794	26,018	31,100
Freight and Mail^c					
Goroka	190	203	301	348	415
Gurney	162	181	200	237	325
Hoskins	424	639	762	691	575
Kavieng	155	192	241	232	465
Mount Hagen	388	452	496	674	1,160
Port Moresby	3,792	4,654	5,142	5,491	7,625
Wewak	565	467	444	464	575

^a Estimates include regular passenger transport, charter and private/other aircraft activity.

^b Includes Air Niugini and Airlines of Papua New Guinea regular passenger transport activity only; excludes all charter activity for all operators (80% of total).

^c Includes Air Niugini cargo and mail figures only (70%–80% of total).

Source: Civil Aviation Authority data.

6. Growth trends are somewhat distorted by services being restricted at some airports, a high degree of second-level charter and private aircraft activity from selected airports (e.g., Mount Hagen), and the exogenous impact on specific airports due to exploration, mining, and resource processing sites being developed and exploited. Generally, there is a strong underlying growth trend in aviation sector activity, involving a 7.5% trend in passenger growth and 2% growth in aircraft movements. Because of the small relative size of RPT operations in PNG, aircraft change to larger-capacity aircraft can have a distorting effect on steady aircraft movement growth at individual airports.

C. Methodology

7. The methodology used follows the standard practice of comparing economic costs and benefits with and without the project, using economic internal rate of return (EIRR) and EIRR sensitivities to further increases in costs and decreases in benefits as decision criteria.

8. A 20-year evaluation period was used and the residual value at the end of this period was assumed to be zero. The benefits and costs of the project occur as an annual stream, at different points in time, as benefits start after expenditure has been completed. All costs and benefits used for the analysis are in 2009 values.

D. Costs

9. The financial costs of the subprojects consist of all incremental capital expenditures, but exclude price contingencies and interest and other charges during construction. The incremental operation and maintenance costs of the project facilities were estimated on the basis of cost parameters developed by the consultant. The project's economic costs include the resource costs for traded and non-traded costs, materials, and labor. All cost elements are valued at border prices, with all taxes and duties excluded. A standard conversion factor of 0.9 was applied to the financial costs of non-traded inputs to calculate economic prices. Table A9.2 presents the economic costs for each airport. Project facilities are expected to have an average economic life of 20 years.

E. Benefits

10. The project is primarily aimed at improving aviation operations and safety standards by rehabilitating existing facilities to cater to current aircraft types (F100), including runways, taxiways, aprons; airfield drainage and maintenance, operational, and terminal facilities; and navigation equipment. To measure project benefits, the willingness-to-pay approach has been applied to estimate incremental aviation revenues for air-side and land-side operations. Other economic benefits considered for economic analysis are (i) aircraft operating cost savings accrued from non-incremental movement of aircraft; (ii) passenger time savings accrued from non-incremental movement of aircraft; (iii) benefits from safety improvements; and (iv) benefits to regional and local communities from construction activity, market sales, and increased tourism. A standard conversion factor of 0.9 was applied to the financial value of benefits to calculate their economic value.

11. The benefits to operators are significant in terms of improvements in aircraft productivity resulting from a reduction in air operating time due to landing delays, as well as a reduction in downtime for maintenance through the elimination of costs associated with damage to aircraft (external instruments, wing flaps, propeller blades, engines) caused by flying stones from deteriorated sealed runways; and a reduction in costs for braking systems and tire replacement due to a longer operational life of braking systems and tires. Airline savings would also arise from the elimination of flight delay direct costs (e.g., having to accommodate overnight crews and passengers at a regional airport after an aircraft was made “nonoperational” on landing when damage to brakes, tires, or undercarriage, for example, occurred); the cost of relocating replacement aircrafts; and the associated cost impact on national flight schedules. The investment program subprojects will also diminish the risk and economic costs of accidents or other incidents caused by poor airstrip conditions, inadequate airport security fencing, and inoperative navigational and landing equipment.

12. Passengers will benefit from improved arrival and departure reliability, savings in travel time (valued in terms of the economic value of time) and in the diminished risk of flight cancellation or diversion, and safety improvements calculated on the basis of risk reduction of a catastrophic accident.¹

13. The confidence of passengers is currently affected by reduced seat availability at airports where runway damage causes service downgrade to smaller aircraft, safety hazards, and a poor record of on-time arrivals and departures.

14. It is significant to recognize that in PNG air safety is largely controlled through RPT airline operating procedures and line captain in-flight decisions. Safety limitations, such as poor weather forecasting services, outdated airport landing profiles, short landing fields, and unsecured airport boundaries, are managed by air service operators, with consequential impact on their aircraft operational costs. While major aircraft accidents and incidents are less likely under these operational conditions, airline operational costs are higher as a consequence. Unsecured airport boundary fences, for example, are managed through aircraft procedures involving inspection overflights before landing. Short landing fields are accommodated by short field landing and takeoff procedures that require more-precise pilot judgment and control and higher aircraft operating costs.

¹ According to the risk factors for different types of airfields, the current risk of catastrophic accident would be reduced by one accident in 10 million operating hours.

15. In the regions and local communities, other than direct labor benefits related to airport construction and operation, the economy could enjoy significant second-round benefits from increased market sales (at those airports where market facility is provided under the investment program) and tourism. Calculations have assumed that all airports will receive some incremental foreign and local tourist and business traffic because of improved and reliable air service access. All airports other than Port Moresby have significant attractive tourism resources, and all have business potential to be further accessed. A forecast based on conservative assumptions was developed to calculate benefits, assuming only 20% of incremental business and tourism expenditure represents the real cost of consumption of locally produced goods and services and return on local investments. On this basis, it is estimated that about K400 per tourist and K227 per business visitor represents the real net benefit from these visitors arriving by air. The long-term benefits to the community are conservative, because they would also include the unquantified benefits from additional employment that would not be created if the airports had not been improved.

16. A conservative approach was adopted in assessing quantifiable benefits incorporated into the economic appraisal. Incremental financial revenue was derived from the financial analysis, adjusted using a standard conversion factor of 0.9. Airline operating cost savings were assessed on the basis of direct aircraft operating cost savings of 10% of hourly aircraft operating costs for F100, DASH 8 (100, 200, and 300 series), and Twin Otter aircraft, on a with (wet) and without (dry) aircrew basis, when improvement in terminal or airport apron movement were involved. Passenger time cost savings were conservatively calculated assuming time cost savings of 10 minutes valued at K14 per hour (weighted average salary of business and private passenger average salaries). Safety improvements were assessed in consultation with ANG and APNG, using a proxy value based on aircraft operating cost savings equivalent to 15 minutes for each landing at airports where improved security was provided through new security fencing.² Regional benefits were conservatively assessed on the basis of increased business and tourist passenger spending of 30% and 20% per total visit expenditure, respectively.³

F. Economic Internal Rate of Return and Sensitivity Analysis

17. The EIRR for the seven airports and Papua New Guinea Air Services Limited varies between 17.7% and 507.2%, with a consolidated EIRR of 45.3%, indicating that project 1 is economically viable (Table A9.2).

Table A9.2: Summary of Economic Analyses

Project 1 Airport Location	EIRR	NPV (K million)
Papua New Guinea Air Services Economic Analysis	86.2%	44.5
Port Moresby - Domestic Apron Extension and Fire Tenders	22.9%	20.1
Mount Hagen: Airport Upgrade and Terminal	18.9%	55.2

² Time savings due to not having to overfly the airfield or await ground confirmation to check airport runway was clear of any hazards range from 20 to 30 minutes depending on weather conditions, time of day, and potential obstructions. Fifteen minutes was selected as a conservative figure.

³ According to the PNG Tourism Promotion Authority's visitor expenditure survey in 2005 and 2007, increased regional expenditure can be expected because (i) improved airport facilities would mean more-reliable and more-frequent service, which in turn would increase the length of passenger stay in the region; (ii) the development of market facilities at airports would generate increased "impact" and "convenience" expenditure in the region by passengers; and (iii) local authorities would undertake promotion efforts to encourage longer visit stay and increased visitor expenditure.

Project 1 Airport Location	EIRR	NPV (K million)
Goroka: Safety Fence	507.2%	82.0
Gurney - Airport Upgrade	24.9%	15.0
Hoskins - Airport Upgrade	17.7%	16.8
Kavieng - Security Fencing	337.6%	98.0
Wewak - Airport Upgrade and Safety Fence	46.5%	49.9
Consolidated - Airport Upgrade, Terminal and Fencing	45.3%	390.8

EIRR = economic internal rate of return, NPV = net present value.

Sources: Civil Aviation Authority and Asian Development Bank estimates.

18. In addition to the base case, the following four sensitivity test cases were examined: (i) the operation and maintenance costs increase by 20%, (ii) the benefits are reduced by 20%, (iii) the operation and maintenance costs increase by 20% and the benefits are reduced by 20%, and (iv) the construction period lengthens by 1 year. Table A9.3 summarizes the EIRRs for the base case and sensitivity cases. The project remains economically viable under the adverse scenarios tested. The economic viability is quite robust, because the EIRR values are well above 12% in the sensitivity analysis cases.

Table A9.3: Economic Internal Rate of Return Values for the Base Case and Sensitivity Analysis Cases

Scenario	EIRR (%)
Base Case	45.3
Sensitivity Tests	
1. All Costs 20% Higher	36.0
2. Benefits 20% Lower	34.3
3. Costs Increase by 20% and Benefits Reduced by 20%	27.6
4. Construction Period 1 Year Longer	32.0

EIRR = economic internal rate of return.

Sources: Civil Aviation Authority and Asian Development Bank estimates.

19. A risk analysis was also undertaken to estimate the limits under which the project EIRR would fall below the opportunity cost of capital. From the analysis, it was estimated that construction costs would need to be more than 200% higher or benefits would have to be reduced by more than 66% over the total period for the project to have an EIRR of less than 12%. This demonstrates the robustness of project 1.

20. Table A9.4 provides a breakdown of costs and benefits for project 1, by item and by year.

Table A9.4: Consolidated – Airport Upgrade, Terminal and Fencing Economic Analysis

Year	Financial Costs				Economic Costs				Economic Benefits					Total Benefits	Net Benefits
	Capital Cost	O&M Cost	Consultancy Services	Total Cost	Capital Cost	O&M Cost	Consultancy Services	Total Cost	Incremental Financial Revenue (1)	Airline Operating Cost Savings (2)	Pax Time Savings (3)	Safety Improvements (4)	Regional Benefits (5)		
2010	41,857		8,712	50,569	37,671			37,671	2,830			8,756		11,586	(26,086)
2011	83,729		8,712	92,441	75,356			75,356	3,962	1,517		9,638		35,117	(40,239)
2012	62,078	1,086	6,307	69,470	55,870	977	5,676	62,523	8,437	3,291		30,993	598	43,318	(19,205)
2013		1,086	6,307	7,392		977	5,676	6,653	12,998	5,451	359	34,702	5,145	58,654	52,001
2014		1,366		1,366		1,229		1,229	14,196	5,724	386	35,523	5,531	61,359	60,130
2015		2,356		2,356		2,120		2,120	14,726	6,010	415	36,366	5,945	63,462	61,342
2016		2,681		2,681		2,413		2,413	13,100	6,311	446	37,232	6,391	63,480	61,067
2017		1,971		1,971		1,774		1,774	15,671	6,626	479	38,120	6,871	67,767	65,994
2018		2,111		2,111		1,900		1,900	15,603	6,958	515	39,032	7,386	69,494	67,594
2019		3,100		3,100		2,790		2,790	15,329	7,306	554	39,969	7,940	71,096	68,306
2020		3,100		3,100		2,790		2,790	16,233	7,671	595	40,931	8,535	73,965	71,175
2021		3,100		3,100		2,790		2,790	17,055	8,054	640	41,919	9,176	76,844	74,054
2022		3,100		3,100		2,790		2,790	17,900	8,457	688	42,934	9,864	79,843	77,053
2023		3,100		3,100		2,790		2,790	18,760	8,880	739	43,977	10,603	82,960	80,170
2024		3,100		3,100		2,790		2,790	19,640	9,324	795	45,050	11,399	86,207	83,417
2025		3,100		3,100		2,790		2,790	20,543	9,790	855	46,152	12,254	89,594	86,804
2026		3,100		3,100		2,790		2,790	21,471	10,280	919	47,286	13,173	93,128	90,338
2027		3,100		3,100		2,790		2,790	22,423	10,794	988	48,452	14,161	96,817	94,027
2028		3,100		3,100		2,790		2,790	23,410	11,333	1,062	49,652	15,223	100,679	97,889
2029		3,100		3,100		2,790		2,790	24,421	11,900	1,141	50,886	16,364	104,712	101,922
2030		3,100		3,100		2,790		2,790	25,462	12,495	1,227	52,157	17,592	108,932	106,142
2031		3,100		3,100		2,790		2,790	26,564	13,120	1,319	53,466	18,911	113,380	110,590
2032		2,500		2,500		2,250		2,250	27,731	13,776	1,418	54,814	20,329	118,068	115,818
Total	187,664	55,457	30,038	273,157	168,897	49,910	11,352	230,159	398,465	185,068	14,122	948,007	223,391	1,652,394	1,438,381
NPV															390.843
EIRR															45.3%

EIRR = economic internal rate of return, NPV = net present value.

Notes:

1. Incremental financial revenue from landing charges and passenger services charges to both commercial and chartered services.
2. Savings in terms of reduced operating costs from brake linings, tyres and other aircraft maintenance costs, flight delay direct costs, e.g., having to accommodate overnight crews and passengers at regional airports. In addition, benefits from avoiding damages to brakes, tyres, under carriage, cost of relocation and replacement aircrafts, and associated cost impact on national flight schedules.
3. Time savings by passengers from events associated with damages to brakes/tyres/undercarriage, cost of relocation and replacement of aircrafts and associated impact on national flight schedules.
4. Time savings due to not having to overfly the airfield or await ground confirmation to check airport runway is clear of any hazards.
5. Regional benefits based on estimates from PNG Tourism Promotion Authority and visitor expenditure surveys.

Sources: Civil Aviation Authority and Asian Development Bank estimates.

SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

Country/Project Title: Papua New Guinea/Civil Aviation Development Investment Program

Lending/Financing
Modality:

Multitrache Financing Facility

Department/
Division:

Pacific Department
Papua New Guinea Resident Mission

I. POVERTY ANALYSIS AND STRATEGY

A. Link to the National Poverty Reduction Strategy and Country Partnership Strategy

1. The Government of Papua New Guinea (PNG) adopted the Medium Term Development Strategy^a (MTDS) 2005–2010 as its strategic framework to promote national development. The overarching goals of MTDS 2005–2010 are: export-driven economic growth, rural development, and poverty reduction, through good governance and the promotion of agriculture, forestry, fisheries, and tourism on a sustainable basis, among other means. Papua New Guineans, especially those in rural areas, will be empowered to mobilize their own resources to improve their living standards. The key priorities for the period to 2010 are: (i) rehabilitation and maintenance of transport infrastructure, (ii) promotion of income-earning opportunities, (iii) basic education and adult education, (iv) primary health care and HIV/AIDS prevention, and (v) law and justice.

2. The country strategy and program for PNG^b 2006–2010 of the Asian Development Bank (ADB) supports the Government in meeting its MTDS goals. ADB and the Government have agreed that the strategic areas that clearly satisfy the principles and lessons learned are: (i) public financial management, (ii) private sector development, (iii) the transport sector, and (iv) health and HIV/AIDS. In the transport sector, the Civil Aviation Development Investment Program upgrading of 21 national airports is one of the top priorities of the Government.

B. Poverty Analysis

Targeting Classification: General intervention

1. Key Issues

Poverty in PNG is overwhelmingly rural, and urban–rural income disparities are widening, as are disparities between communities within and outside of the enclave resource projects. Poverty is about three times more severe in rural than in urban areas, and varies in severity across rural regions, with about 75% of the poor living in the Sepik and Highlands regions. Between 1996 and 2003, the number of Papua New Guineans living below \$1 per day is estimated to have doubled from 1.1 to 2.2 million (World Bank Socio Impact Study 2007). The poverty headcount index, for the \$1 poverty line, was about 39.4% in 2003, up from 24.6 % in 1996. An estimated 70% of the population now live on less than \$2 per day, up from 54% in 1996 (provincial development data).

The investment program will cover the upgrading of 21 airports nationwide, including Buka, Chimbu, Daru, Goroka, Gurney, Hoskins, Kavieng, Kerema, Kiunga, Mendi, Momote, Madang, Mount Hagen, Lae (Nadzab), Pependetta, Port Moresby, Tari, Tokua, Vanimo, Wapenamanda, and Wewak. As the project areas have nationwide coverage, the investment program has the potential to affect the whole population. The first tranche, which covers five provinces (National Capital, Western Highlands, East Sepik, West New Britain, and Milne Bay), has the potential to serve a population of up to 1,586,978 people.

The poverty levels in the five provinces under project 1 are shown below:

Table A10: Poverty Levels

Province	Human Poverty Index	Human Development Index	Gender-Related Development
National Capital	14.5	0.758	0.506
Western Highlands	55.5	0.282	0.261
East Sepik	47.3	0.304	0.282
West New Britain	31.9	0.394	0.388
Milne Bay	31.4	0.420	0.387

Source: Papua New Guinea Census 2000.

As shown in the table, the human poverty index in East Sepik and Western Highlands of the provinces are below the national human poverty index (39.4%). In addition to low incomes, a 2001 participatory poverty assessment (funded by ADB) clearly indicates the non-income dimensions of poverty in PNG: specifically, people consider themselves poor when they lack (i) jobs, (ii) land, (iii) education, (iv) services such as health and water, and (v) transport and roads. The most pressing needs are safe

drinking water and usable roads. While available data are limited and in need of updating, the risks of a rapid rise in poverty levels in PNG are clear. The salient issues include:

- (i) In 1997, 37% of the population lived below the poverty line of K461 per year. A further 17% of the population was unable to meet the basic food requirement of 2,200 calories per day per adult equivalent. In terms of the international poverty line, one-quarter of the people in PNG lived on less than \$1 a day; 54% lived on less than \$2 a day.
- (ii) Because of poor economic performance combined with rapid population growth, the incidence of poverty is estimated to have nearly doubled in the period 1996–2003 from 37.5% to 53.8%. It is estimated that 40% of the PNG population lived on less than \$1 a day in 2003, while 70% were below the level of \$2 a day.
- (iii) Poverty is concentrated in rural areas. The rural poverty rate (41%) is significantly higher than the urban rate (16%). The Highlands region, with 40% of the national population and a poverty rate (1996) of 38.3%, is one of the poorest regions in the country.
- (iv) The highest poverty levels occur among households with little or no cash income, that is, families that rely primarily on subsistence agriculture, hunting, gathering, and fishing to meet household consumption needs. However, poverty is also high among farmers that grow and sell tree and other cash crops. Overall, people involved in the agriculture sector account for 86% of the poor.
- (v) Households headed by women are among the poorest in rural areas of PNG.

2. Design Features

The investment program will contribute to rural development and poverty reduction. Improved airport facilities will increase the mobility and access of people to markets and other natural resources. People living in the project areas will directly benefit from job opportunities through the required civil works and maintenance, market upgrading, and increase in various business (in particular, tourism) opportunities. The investment program design includes: (i) priorities for the employment of local men and women in the upgrading of airport facilities and maintenance, (ii) the upgrading of a market at each airport site, (iii) contractor specifications for the provision of HIV/AIDS awareness and prevention programs for construction workers and neighboring communities, and (iv) an extensive community relations and participation program linked to different aspects of tranche preparation and implementation through a full-time community relations officer (CRO) under the project implementation unit (PIU). The consultations with communities during project preparatory technical assistance strongly supported market upgrading to directly benefit them. The primary beneficiaries of the program will be airport users and local communities at each project site including airport market vendors (especially women selling vegetables, food, and handicrafts). The secondary beneficiaries would include public transport service industries and tourism-associated industries.

II. SOCIAL ANALYSIS AND STRATEGY

A. Findings of Social Analysis

Key Issues

There are more than 800 languages in PNG. With a land area of nearly 463,000 square kilometers and a population exceeding 6 million (2007 estimate), Papua New Guinea is the largest developing country in the South Pacific region. The population is growing at an annual rate of about 2.7%, and nearly half of the population is 19 years of age or younger. Most Papua New Guineans live in rural communities based on traditional village social structures and dependent on subsistence agriculture supplemented by cash cropping. Less than 15% live in urban areas, although migration to cities and towns in the past decade has contributed to substantial urban unemployment and accompanying social problems. Livelihoods of people in the project 1 airport site areas combine subsistence agriculture (sweet potatoes and tapioca), cash cropping (coffee, cocoa and coconut, and livestock raising (pigs and chicken). Household incomes from sales of agricultural products or other local market sales are generally very small.

Throughout PNG (Highlands, Coastal, and Islands), people live on their clan territory. In the Highlands, small hamlets of 4–10 closely related households (or subclans) are more common. In the coastal and island communities, it is more common for people from several clans to live together in villages. An extended family of 10–15 adults and their children will generally live on at least 2–3 hectares and have up to 5 hectares of agricultural land.

While primary enrollment is relatively high, retention of girls is a major problem. This was clearly evident in the socio-gender economic survey findings in the four airport site communities. Girls' share of the secondary school enrollment ratio in PNG was just 23% in 2005, and only 1% of those who enter grade 1 will also enter a tertiary institution. In rural situations, high schools are often residential and the number of dormitory spaces limits girls' educational opportunities. The female adult literacy rate is only 51%, and women's ability to function effectively, gain access to services, and support their families is further constrained by the multilingual nature of the country.

PNG has 90% of the HIV/AIDS cases in the Pacific and is considered to have a full-blown epidemic with case numbers increasing by 30% yearly. As of 2005, there were 14,276 cases of HIV/AIDS, more than half of which were women. There is a

high level of stigma attached to HIV/AIDS and to those who act as caregivers—primarily women—which inhibits testing and reporting (Papua New Guinea Pacific Gender Profile, 2008). Although the investment program will have a positive impact on PNG, it also has the potential to increase the spread of HIV/AIDS through air connectivity. According to the 6-monthly surveillance reports on sexually transmitted infections (STI) and HIV/AIDS prepared in 2008 by the National Department of Health and funded by ADB, the number of reported cases by gender and province show Western Highlands to have the highest number (35.2%), followed by the National Capital District (16.7%), Eastern Highlands (13%), and Morobe (13%). The other airport provinces had the following reported cases: West New Britain, 0.1%; East Sepik Province, 2.9%; and Milne Bay, 0.3%. STI/HIV mitigation involving prevention and safety measures for construction workers and neighbor communities are incorporated in the design and implementation stages of the investment program.

Improved airports are expected to foster rural development, reduce poverty, and increase accessibility to health and education services. It is envisaged that the investment program will result in the lowering of airfares because of increased competition and volume of travelers.

B. Consultation and Participation

1. Provide a summary of the consultation and participation process during the project preparation.

An extensive program of consultations, women's focus group discussions, and questionnaire surveys took place during the preparation of the investment program. An initial extensive program of consultation has taken place. During the project preparatory technical assistance fact-finding stage, a stakeholder analysis was carried out to identify the major important stakeholders, their interest in the proposed program, their perceptions of current problems related to safety and security associated with airport operations, passenger terminal logistics, and civil aviation services, and the resources they could bring to the achievement of goals and objectives of the program. Meetings have been held at the national level with Civil Aviation Authority (CAA), Ministry of Transport (MOT), the Dept. of National Planning and Monitoring, the Dept. of Treasury, Air Niugini Airlines, Airlines of PNG, PNG Air Services Ltd., PNG Airports Ltd., and the Australian Agency for International Development (AusAID) and its Transport Sector Support Program (TSSP).

At the loan preparation stage, another stakeholder analysis was carried out to identify the secondary stakeholders, their support for the proposed program, their perceptions of current problems related to airport use and affordability, as well as their current benefits and potential benefits from upgrading. Further consultations were organized with relevant development partners and stakeholders such as AusAID, UN agencies, nongovernment organizations (NGOs), international NGOs (INGOs), women's groups, and community-based organizations (CBOs). Community consultation meetings were organized with local stakeholders and business houses in Wewak (East Sepik Province), Hoskins area (West New Britain Province), Mount Hagen (Western Highlands Province), and Gurney in Alotau (Milne Bay Province) with provincial and district administrators participating. These meetings targeted current users and potential beneficiaries of the airport improvements to find out their views on affordability and other social benefits.

For the project 1 airports, the views of the communities living close to the airports have been sought through small sample surveys of households (120 households), and the market and informal sectors (25 persons), as well a program of community consultations in that brought together up to 20 people in each of 8 communities and women's focus groups (10–15 women each) in 8 villages.

2. What level of consultation and participation (C&P) is envisaged during the project implementation and monitoring?

Information sharing Consultation Collaborative decision making Empowerment

3. Was a C&P plan prepared? Yes No

Under the investment program PIU, a full-time CRO will be hired and, in collaboration with the environmental officer, will establish a consultation program for each tranche airport project. The purpose is (i) to inform communities about the investment program and, in detail, about the airport upgrading works; (ii) to provide information about the expected benefits and potential adverse impact, as well as project measures such as compensation, environmental management, and community-based initiatives; (iii) to provide a platform for communities to participate in the upgrade and express their interests, preferences, and concerns; and (iv) in general, to facilitate different aspects of the implementation of the tranche projects. Consultations with communities will take place at different points in the planning and implementation of subprojects and include:

- (i) In the initial stages of airport works preparation, the community liaison officer of the investment program PIU will consult with communities as part of the process of confirming that the airport meets the eligibility criteria to be included in the investment program. The support of communities is a key criterion, along with preliminary assessments regarding the potential scope of additional land requirements, existing land tenure, and any other adverse social and environmental impact.

- (ii) During the preparation of the subsequent tranches, the investment program will organize or assist other parties (e.g., provincial land officers, environmental consultants) in organizing various consultations, awareness programs, and surveys that form part of the work (a) to conduct an environmental assessment of the airport, and (b) to identify additional land requirements for the extension of airport runways and facilities, as needed, to prepare a resettlement plan.
- (iii) During the preparation and implementation of the subsequent tranches, the investment program will organize or assist other parties (e.g., provincial land officers, independent monitoring organization, social monitoring consultant) in organizing consultations, awareness programs, and surveys, which will also form part of the work on: (a) acquisition of additional land, (b) independent monitoring of land acquisition activities, (c) environmental monitoring work, and (d) baseline and follow-up studies as part of the social monitoring study.
- (iv) Throughout the work on all the tranches, the CRO or environment officers from the investment program will meet periodically with communities to find out whether there are social, environmental, or other issues that require attention, for example, in relation to opportunities for community-based maintenance or resolution of grievances. These consultations will occur according to a program agreed on with communities or on an ad hoc basis.

Consultations with communities at airport locations will be designed not only to inform people about specific activities related to its preparation and implementation, but also to enable people in the community to ask questions, make suggestions, state preferences, and express concerns. The investment program community liaison officer will work with the community leaders to organize meetings with the community. Although different meetings may target specific stakeholders (e.g., affected groups), the investment program and community leaders will encourage all members of the community to participate. Special attention will be paid to the participation of women and any other vulnerable groups. Because women are less likely to contribute to meetings that involve the entire community, the investment program will ensure that women's focus groups are organized to obtain their views, preferences, and concerns where relevant.

C. Gender and Development

1. Key Issues

Levels of development for women vary drastically depending on geographic isolation, history of contact with colonizers, matrilineal or paterlineal culture of the group, quality of governance at the provincial level, and levels of service delivery and infrastructure. In general, for the 21 national airports sites of the investment program in reference to gender and development show strong patriarchal structures where male dominance is influential. However, there are some instances of matrilineal structures (where females by customary rights lead and own land) particularly in the New Guinea island provinces. According to the literature and review of the gender socioeconomic data in the airport sites, these patriarchal values are being destroyed by intermarriage and the stronger influence of the patriarchal structures. This means that women in these provinces are not proactively participating in project cycles (planning, design, implementation, and monitoring), especially in decision-making roles, but play secondary roles within the periphery of semi-unskilled labor. There are, however, some influential women in decision-making roles (2%) that can take proactive roles. The CAA, through the investment program, encourages the hiring of women as engineers or managers for the required civil works to comply with the Government's gender strategy.

Moreover, according to the findings of the socio-impact studies and women's focus group meetings in the five airport site provinces, the majority of the grassroots women (90%) do not currently use the airport and related facilities in their daily lives. A few (10%) who have small businesses to earn extra income can afford to travel at least once or twice a year to visit relatives, but the majority of the women said that the fares were too expensive for them to travel. The women suggested that the development of a bigger airport market by the investment program would greatly induce them to come and sell their goods to generate extra income for their basic needs.

Women are constrained from engaging in private sector activity and small business by their lack of access to credit and banking facilities. This lack of access is, in turn, linked to their lack of control over property and productive resources. Even in matrilineal areas where land registration has been introduced (East and West New Britain), women report that brothers take on the role of signatories and then override the guidance of female relatives who have cultural inheritance rights to land. On a positive note, government, NGOs, and donors are collaborating to enhance and increase microfinance for women in PNG, and are providing training in the use of credit and savings.

Violence against women and girls is epidemic in PNG. It contravenes their human rights, contributes to the spread of HIV/AIDS, negatively affects women's and children's mental health, and undermines women's social freedoms, productivity, and contribution to national development. Violence against women has been a recognized development issue for decades, and donors have funded significant high-quality work since the 1980s. However, without the political will and commitment to action in the police, military, and judicial systems, law reform proposals, policy initiatives, and public awareness campaigns can have only a minor ameliorative effect and women will still be afraid to report cases of violence. The investment program addresses the health and safety issues as one of the project assurances.

2. Key Actions. Measures included in the design to promote gender equality and women's empowerment—access to and use of relevant services, resources, assets, or opportunities and participation in decision-making process:

Gender plan Other actions/measures No action/measure

3. Gender Action Plan: Proposed Airport Market

The investment program outcome will positively influence gender equality and empowerment of women in varying degrees depending on the context of the project cycle. For instance, the increase in job opportunities from airport upgrading will increase household incomes and, in turn, increase education for all and health-care services, in particular for children and women, who are the primary users of health services. The program will also increase access to better airport markets, which will help rural women generate extra income to meet their basic food, health, educational, and transport needs. In general, the gender-socioeconomic baseline data and qualitative findings gathered around the airport site communities indicated alarming poverty levels. This implies a greater need in these communities to earn extra income. Having an airport market will also promote tourism, giving extra income to the communities.

As noted above, the CAA construction and maintenance work will create opportunities for employment. It is important to encourage women to be involved in skilled areas and decision-making roles (as managers and engineers) rather than just non-skilled and service-type work. This reinforces the gender-stereotyped attitudes dominant in Papua New Guinea, a constraint on women's advancement. In resettlement plans, for example, women must be consulted (100%) to ensure they, and not only the men, have legal property and inheritance rights, income, and assets rights.

In the planning and preparation stages, it is crucial for women to be proactively involved in the decision-making committees at all levels (institutional, national, provincial, community, and local level). In the case of a market proposal, for example, it is important that users are consulted. In particular, women need to be involved in the design stage as main market users. The activities to reinforce project outcome and outputs will incorporate specific features, strategies, targets, indicators, and benchmarks to facilitate both men's and women's active participation in decision making (CAA and PIU). This will include gender-responsive policy measures.

III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
Involuntary Resettlement	The investment program is classified as category B with respect to involuntary resettlement.	All works will be planned to minimize the need for additional land. Land acquisition screening will be conducted to confirm the eligibility of each airport site for inclusion in the investment program and to define the scope of the short resettlement plan. Subsequent short resettlement plans will be prepared in compliance with the resettlement framework prepared for the investment program in accordance with the Government's and ADB's policies and regulations.	<input type="checkbox"/> Full Plan <input checked="" type="checkbox"/> Short Plan <input checked="" type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action
Indigenous Peoples	The investment program is classified as category B with respect to indigenous peoples.	All ethnic groups will benefit. Specific actions for indigenous people are indicated in the resettlement documents.	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> Indigenous Peoples Framework <input type="checkbox"/> No Action
Labor <input checked="" type="checkbox"/> Employment opportunities <input type="checkbox"/> Labor retrenchment <input checked="" type="checkbox"/> Core labor standards	The investment program encourages the use and recruitment of local community members for casual work on the civil works for airport	Airport civil works contracts will stipulate priorities to: (i) employ qualified local people for civil works to upgrade airports; (ii) negotiate contracts with local	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
	upgrading.	communities for routine maintenance work; (iii) ensure equal opportunities for women and men for civil works and maintenance work; (iv) pay promptly equal wages to men and women for work of equal value, and pay women's wages directly to them; and (v) not employ child or forced labor for any of these works.	
Affordability	The program will increase the number of flights and decrease the flight fare. No negative impact is expected.		<input type="checkbox"/> Action <input checked="" type="checkbox"/> No Action
Other Risks and/or Vulnerabilities <input checked="" type="checkbox"/> HIV/AIDS <input type="checkbox"/> Human trafficking <input type="checkbox"/> Others(conflict, political instability, etc), please specify	PNG has a generalized HIV epidemic, with prevalence rates of over 1% among 15- to 49-year-olds in rural areas.	The inherent risk of STI is acknowledged, in light of the increased mobility and connectivity. Risk mitigation measures to be adopted under the program will include specific assurances to ensure HIV and STI prevention by civil works contractors in the airport campsites and in neighbor communities in collaboration with the provincial AIDS and health administration.	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action
IV. MONITORING AND EVALUATION			
Are social indicators included in the design and monitoring framework to facilitate monitoring of social development activities and/or social impacts during project implementation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

^a Government of Papua New Guinea. 2004. *Medium Term Development Strategy 2005–2010*. Port Moresby.

^b ADB. 2006. *Country Strategy and Program (2006–2010): Papua New Guinea*. Manila.

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

A. Introduction

1. The Government of Papua New Guinea has taken up a plan to improve the current state of the country's domestic air transport system under the Civil Aviation Development and Investment Program. Five major airports (project 1) in the country have been identified mainly on the basis of the relative importance of these airports as domestic hubs for tourism and economic development on a regional basis. An initial environmental examination (IEE) was prepared for each airport project on the basis of the available preliminary design information. The investment program has been classified as category B in accordance with the *Environmental Assessment Guidelines* (2003) of the Asian Development Bank (ADB), and the Government's environmental requirements. The Government's *Environment Act* (2000) uses the *Environment (Prescribed Activities) Regulation* (2002), which designates projects that need environmental assessment as "prescribed activities." The upgrading or rehabilitation of airports is not listed among the "prescribed activities" and would not require an environmental permit. The Department of Environment and Conservation (DEC) has, however, advised that certain activities may require an environmental permit depending on their duration and scale. The Civil Aviation Authority (CAA) will disclose to DEC the scale and scope of future subprojects to determine the requirements under the *Environment Act* (2000). Environmental assessments will be prepared for future subprojects according to the prepared environmental assessment review framework (EARF).

B. Description of the Investment Program

2. The proposed program involves the upgrading or rehabilitation of the project 1 airports: (i) Wewak, (ii) Hoskins, (iii) Gurney, (iv) Mount Hagen, and (v) Jackson's domestic airport (Table A11). It is designed to meet international safety standards and provide sufficient runway length for unrestricted operations of F100 jet aircraft or equivalent aircraft. The program includes institutional strengthening and capacity building to support the strategic management of aviation development while improving environmental management. The multitranche financing facility (MFF) is expected to be released in four tranches.

Table A11: Investment Program

Subproject/Location/Proposed Development Works
<p>Wewak Airport East Sepik Province Extend runway length by 200 m, from existing 1,600 m to 1,800 m Retain runway width of 30 m similar to existing Construct extension strip width of 150 m (mark 90 m to match existing) Extension surfacing: prime and 3x coat seal (10 mm/7 mm/sand) similar to existing condition Realign Perigo Road Realign existing large storm water drain Construct bridge over Brandi Road at realigned storm water drain Extend car park at rear of terminal building Lop infringing trees in golf course to clear the approach/take-off path Supply, install and commission a new PAPI landing aid system</p>
<p>Hoskins Airport West New Britain Province Widen the existing runway from 30 m to 45 m Construct a 90 m end of runway safety zone (RESA) at southeast end, and stop ways at both ends Widen the existing flight strip to 150 m Replace all open drains within the strip with piping systems Relocate a precision approach path indicator (PAPI) visual guidance system at the southeast end to the new touchdown point Widen the taxiway shoulders to 5 m</p>

Subproject/Location/Proposed Development Works
Design the apron to provide for two F-100 parking positions Reinstate pavement markings
Mount Hagen Airport Western Highlands Province Strengthen the pavements to the main runway, taxiways, and apron Lengthen runway by 110 m at the western end Construct 3 m-wide full strength asphalt surfaced shoulders on each side of the main runway Surfacing of the strengthened aircraft pavements and new shoulders to runway with dense graded asphalt and runway grooved Widen main runway strip from 90 m to 150 m wide Reconstruct sealed stopways 60 m x 30 m-wide at each end of the strengthened runway Reconstruction of 90 m x 90 m RESAs beyond the stopways at each end of the runway Flank earthworks to match raised levels of aircraft pavements Install new lighting systems to the main runway Strengthen the pavements to the secondary runway Reinstate all pavement markings Adjustments to the PAPI Landing Aid System at the end of runways
Gurney Airport Milne Bay Province Extend the eastern end runway by 160 m x 30 m to a total 1,850 m Construction of a new 60 m stopway at the eastern end Construction of 90 m x 90 m RESA at both runway ends Apply single coat 7 mm chip reseat to existing pavements and reinstate fuel resistance membrane and line markings Diversion of the existing open unlined drains (OUD) at the Eastern end and install a new culvert under the RFFS access road Install a new multi-cell culvert under the plantation access road Relocate existing PAPI at the eastern end and conduct flight test
Jackson's Airport National Capital District Extend domestic apron by 162 m long x 80 m-wide at the NW end Construct new stub taxiway connecting the new extended Apron to the existing parallel taxiway. Taxiway min 18 m wide Construct 5 m-wide sealed shoulders to the new Apron and new stub taxiway Construct new aircraft pavements Construct concrete encased duct bank 6 x 100 mm x 60 m long Construct new apron access road 10 m wide x 90 m long Construct flank earthworks, topsoil and grassing Construct 4 concrete pads, each 22 m x 12 m Construct storm water drainage associated with the new apron extension and new stub taxiway including: (i) new RC box culvert 2 No 1,900 mm wide x 1,250 mm high x 45 m long under new stub taxiway; (ii) construct open drain lining either end of the new box culvert; (iii) realign the existing open unlined drain; (iv) construct an open Vee Drain beyond the NW shoulder; and (v) supply and install apron flood lighting to the extended apron Paint new pavement markings to aircraft pavements

Source: Civil Aviation Authority.

C. Description of the Environment

3. Papua New Guinea (PNG) is the largest of all Pacific Island nations with a land area of 460,000 square kilometers, a population of 5.7 million, and an average population density of 12 persons per square kilometer. The climate is generally hot and humid, with temperatures ranging from 23°C (day) to 12°C (night). Air quality is good, and water pollution, caused by unregulated runoff from industrial activities and the direct dumping of wastes, i.e., domestic waste and sewage into river systems, is common. Water resources are abundant, with an estimated total renewable water resource per capita of 159,171 cubic meters per person in 2002. About 29% of the population has access to safe drinking water. The forests of PNG are the third-largest block of intact tropical forest in the world, estimated at 26.1–33.0 million hectares. HIV/AIDS is a major concern, with infection rates at 50,000 persons and a potential infection rate of 30% of the total population within 10 years.

D. Screening of Potential Environmental Impact and Mitigation Measures

1. Impact Associated with Planning, Location, and Design

4. Project 1 will involve the upgrading or rehabilitation of existing airports. The works will be done within existing property or on state land. No adverse impact is anticipated from the design or the siting (existing airports) of the proposed projects. The requirements in the contract will include full implementation of the EMP, with the CAA preparing resources to fulfill the requirements of the law and guiding the contractors in environmental management.

2. Environmental Impact of Construction Activities

5. The subprojects will be improved within existing airport property and with minimal land clearing. The physical impact will be from earthworks, noise, and potential impact on surface water. Water quality impact such as that from fuels, lubricants, and solid waste stockpiles can be avoided through proper storage and disposal, and the siting of camps, borrow areas, and ancillary facilities away from water bodies and at least 500 meters away from the settlements and forest areas with water and sanitation. Contractors will submit site EMPs describing the implementation of mitigation measures, the location of borrow areas, and provisions for the disposal of excess excavation materials. Laborers will be hired from local communities or other parts of the province to the extent possible.

3. Environmental Impact of Operations

6. Environmental impact during operation will come from neglect of mitigation measures, particularly wastes and pollution, noise, and airport accidents. The sewage system will be maintained in good condition, and possibly connected to nearby main lines or, when required, a sewage system will be established. Procedures and facilities for the handling of fuels, lubricants, and other chemicals (normal airport operations and aircraft maintenance) will be established; fuel and sediment traps will be installed in drain entries to capture accidental spills; and a monitoring system will be included in the EMP to mitigate the possible contamination of soils, groundwater, and waterways. A solid waste management system will be developed for the airport operation, and proper sanitation and sewerage facilities will be constructed. Noise exposure levels will be monitored and planning rules developed for the construction of dwellings within the noise exposure footprint, and the location and timing of ground running of aircraft.

E. Institutional Requirements and Environmental Management Plan

7. Effective implementation of the EMP requires an institutional setting, framework and information flows. CAA, the executing agency of the investment program, will work with the program implementation unit (PIU) to monitor the environmental aspects of design, contracting, mobilization, and construction. The PIU will be responsible for the daily implementation of the program through program support consultants, including an international environment specialist (engaged intermittently for a total of 8 months over the program period) and national expert input of 96 months. The international environment specialist, who will report to the program director of the PIU, will be tasked to: (i) strengthen the environmental management of the program during detailed design, bidding, contracting, construction, and implementation; (ii) supervise and guide the environmental assessment process for all subprojects under the MFF; (iii) supervise the implementation of the EMPs for subprojects; and (iv) undertake the

necessary institutional strengthening including on-the-job training for the environment officer of the CAA. The CAA, through PIU, will notify DEC through the submission of subproject notification in the prescribed format, and endorse environmental assessments required prior to the implementation of the subproject packages. It will also ensure that all mitigation measures in the EMPs are implemented by the contractors for the subprojects. The EARF will include a general description of the anticipated environmental impact, screening and classification procedures and environmental assessment of subprojects in future tranches, and compliance with all PNG statutory requirements. EMP implementation during the works will be the responsibility of the contractor, who must (i) incorporate environmental safeguards in the technical specifications, (ii) have the EMP reviewed before the start of construction, and (iii) monitor and report to the PIU in the course of the works.

F. Public Consultation and Disclosure

8. Public consultations were carried out in May 2009. Persons consulted included local residents, community leaders, and local officials to present the proposed program, elicit issues and concerns among the people in the impact area that may be relevant to the proposed development, and discuss ADB's environmental requirement for programs of this type. The participants in the public consultations were unanimous in their support for the proposed development and will not interpose any objection to its implementation. Major priorities raised by the stakeholders during the public consultations were employment and livelihood opportunities for qualified village folk, the provision of a potable water supply system, and the construction of marketplaces in villages within the periphery of the subproject airports.

G. Findings and Recommendations

9. The IEE reports on the various subprojects provided assessments of the potential environmental impact associated with project 1 and the mitigation measures. The development will not cause any significant environmental impact as all the works will be undertaken within the existing airport boundary. The responsibilities for the implementation of mitigation measures are indicated in the IEE and EMP and will be clearly defined in contracts and agreements, which will be monitored by the environment officer of the CAA. The implementation of the mitigation measures during construction will be assigned to the contractors and included in the contracts. The IEE and EMP and conditions included as part of the environmental compliance from the DEC will be the basis for environmental compliance in a regular program of environmental monitoring and auditing. Considering the above, the IEE reports prepared for the five airports can be finalized as the environmental assessment of the investment program.

H. Environmental Assessment and Review Framework

10. The executing agency of the investment program will be the CAA, which will be responsible for the implementation of the EARF including the preparation of IEE/SIEE or EIA/SEIA (if warranted). The environmental assessment reports with environmental clearance from DEC (as necessary) will be submitted to ADB together with the periodic financing request for review and approval before the finalization of contracts or the start of work. Public consultations will also be carried out and CAA will submit the required documentation to ADB. The PIU in CAA will ensure that appropriate environmental assessment reports (with EMPs) are submitted to ADB in time for review and approval before the contracts are finalized or work begins. The PIU will also ensure that the EMP and all required mitigation measures during construction are included in the contractors' contracts, with requirements to update the EMP in

response to any unexpected impact and fully implement the EMP during construction. During the implementation of the MFF, ADB will review the environmental assessment reports for subsequent subproject approvals, disclose environmental assessments, where necessary, before a periodic financing request is submitted to ADB, and monitor EMP implementation and conduct due diligence as part of MFF reviews. ADB will assist the CAA in carrying out its responsibilities and to build capacity and ensure that it conducts the required consultations with project-affected groups and local nongovernment organizations. An EARF has been prepared that presents the general anticipated environmental impact, subproject selection criteria, and subproject environmental procedure as guide for the preparation and approval of environmental assessments of future projects to be financed under the investment program.

I. Conclusion

11. The IEE reports for the subproject packages have assessed the potential environmental impact from the subprojects under project 1 to be temporary, reversible, and easily mitigated with available methods. The mitigation measures proposed in the IEE/EMP for the subprojects are sufficient. At the implementation stage, CAA will monitor the implementation of mitigation measures and monitoring programs specified in each IEE/EMP. With these measures in place, it is predicted that all potential environmental impact can be mitigated to insignificant levels; as such, no further impact assessment is considered necessary. A semiannual report on EMP implementation will be submitted to ADB and the relevant government agencies. Environmental assessment will be required for all subprojects in future tranches. EARF will guide the environmental management of the overall program and the environmental assessment of individual subprojects in the future.

SUMMARY RESETTLEMENT FRAMEWORK

1. The resettlement framework for the investment program and the due diligence report (DDR) for each project 1 airport site were prepared in compliance with the *Involuntary Resettlement Policy* (1995) of the Asian Development Bank (ADB). These documents provide guidance in establishing the policies and procedures for compensating affected people for lost or damaged assets. The resettlement framework is based on the principles established in ADB's *Involuntary Resettlement Policy* and relevant sections of the *Operations Manual* (as updated in 2006). The resettlement framework will be the basis and will guide the Civil Aviation Authority (CAA) in preparing and implementing the resettlement issues for the program. At the beginning of each tranche, the policies and provisions of the resettlement framework will be reviewed and, as required, updated to reflect the conditions and requirements for upgrading airports, but without lowering the standards set out in the present resettlement framework. The DDR will be updated, if necessary, on the basis of the detailed engineering design during loan implementation.

2. The Government of Papua New Guinea had originally acquired land for the establishment of national airports from customary ownership. To all extent possible, civil works proposed under the investment program, including the upgrading and extension of runway, will be undertaken within the existing airport boundary (CAA-/state-owned land); therefore, very limited land acquisition for the program is expected. However, there will be both permanent and temporary resettlement issues to be solved under the program's subsequent tranches.

3. It is therefore expected that the potential number of people that will experience the incidental impact of the upgrading of airports under the program will be small, and well within the category of "minor" or "no significant resettlement impact" under ADB's policy. A screening of the four airport sites under project 1 has been undertaken. The program is currently classified as category B with respect to involuntary resettlement.

4. The Government through CAA, has agreed to expedite the implementation of the investment plan. In cases where additional land is required to upgrade and extend airport runways under the investment program, the land acquisition will be done through a process of state alienation of customary land according to the Land Act of 1996, led by the Department of Lands and Physical Planning. However, as this process is usually lengthy, CAA is examining the benefits of expediting land acquisition through a memorandum of agreement (MOA). This process was used by the Department of Works in acquiring land for the Highlands Road Improvement Project. The MOA will be prepared after the land is valued. Therefore, it will indicate the compensation amount.

5. The MOA will be the interim means of securing the land to allow upgrading works to continue while the process of land acquisition as stipulated in the Land Act continues. When the land acquisition process is complete, the acquired land will be leased to the CAA, and the MOA will be superseded. Under the Land Act, affected people will be compensated for land; individuals and households with assets on the land will be compensated for any damage to or loss of these assets by the State through agreements with tribal owners.

6. The program entitlement matrix was prepared as a part of the resettlement framework (Supplementary Appendix G). Affected people will be compensated for any loss of or damage to land, crops, trees, temporary structures, or other assets, according to the policies stated in this resettlement framework. All costs of the investment program related to land acquisition,

compensation and allowances, operation and administration, surveys, monitoring, and reporting will be financed by CAA through the Government using counterpart funds.

7. All people who own crops, trees, temporary structures, or other assets on affected land are entitled to compensation for the loss of or damage to these assets. Compensation will be paid in cash at replacement cost. In addition to compensation, affected persons are entitled to assistance, for example, in shifting temporary informal market structures for disrupted businesses. Affected persons will also be given priority in employment in the program civil works and ongoing maintenance.

8. The investment program will monitor and report semiannually to the CAA and ADB on all activities associated with the establishment of MOA and the payment of compensation to affected persons. The scope of internal monitoring includes: (i) compliance with the agreed policies and procedures; (ii) prompt approval, allocation, and disbursement of funds, and payment of compensation to affected persons, including supplemental compensation for additional or unforeseen losses; (iii) the availability of other resources and efficient, effective use of these resources; and (iv) requirement for remedial actions.

9. The CAA project implementation unit (PIU) will recruit a local social safeguard specialist to independently conduct external monitoring of the program subprojects. The person will be based at the PIU and will be supported by a community liaison officer (CLO). The specialist will be mobilized at the beginning of project 1 of the investment program. An independent monitor under the social safeguards section will be responsible for reporting to the PIU, CAA, and ADB on all activities related to additional land requirements, community consultations, preparation of resettlement plans, and payment of compensation. The external monitoring will focus on the social impact of the subprojects and the ability of the affected persons to restore, and preferably improve, their pre-project living standards, incomes, and productive capacity.

10. Consultations will be carried out at different points in the preparation and implementation of tranche projects, as part of the process of negotiating the MOA. With support from the PIU, CAA, local government ward councilors, and relevant local authorities, the investment program will organize consultations with affected communities. Participants will include appointed and traditional leaders in the village, affected landowners, and community people affected by the loss of assets on the affected land. Village leaders will encourage all other community members, including women, elderly people, young people, and disadvantaged members of the community, to attend. Because of cultural barriers, women are often reluctant to speak at community meetings. Where relevant, separate meetings may be held with them to understand and discuss their preferences and concerns. Where indigenous people or a linguistic group requires translation assistance, the investment program will ensure that a translator or translated materials are provided to ensure that the particular group has full understanding of the resettlement issues and process of compensation.

11. The key consultations will occur before or during the project works. There will be (i) screening and preparation of the subprojects within each tranche; (ii) MOA negotiation, an asset survey, and social surveys; (iii) disclosure and review of the draft resettlement plan; and (iv) land ownership investigation and preparation of land investigation reports (LIRs). The investment program and the social specialist will consult with communities and affected people on related issues, as required, throughout the preparation and implementation of tranche projects. Throughout these consultations, the objectives are (i) to provide timely and complete information about the project, land requirements, and impact, to enable people to make

informed decisions; (ii) to ensure that all affected people and other interested stakeholders know and understand the policies and procedures related to additional land requirement for the upgrading of the airports; and (iii) to build and maintain community support for the investment program by addressing the concerns and preferences of affected people and other stakeholders. The resettlement plan will be disclosed according to ADB policies.

12. Program grievance redress mechanisms will be established to ensure that all affected persons' grievances related to any aspect of land acquisition or compensation for affected assets are resolved in a timely and satisfactory manner. The CLO is the first step to addressing grievances. The grievance redress mechanism will apply equally to the negotiation of the MOA. Affected persons will be made fully aware of their rights (both orally and in writing) during consultations about land requirements for the CAA airports. The mechanisms will be based on the provisions of the Land Disputes Settlement Act, using the CLO as a first step in the tradition of local mediation that is used throughout PNG. The participation of appointed and traditional leaders will be promoted to achieve satisfactory resolution of issues at the local level. In the event that grievances cannot be resolved through local mediation, the matter will be referred to the land court system. In this case, the program and the district lands officer will hold the compensation amounts in a trust fund. Compensation will be paid in full upon final resolution of the case in the courts or other forum, in accordance with the entitlements of the affected person.

13. The CAA, as executing agency for the investment program, has overall responsibility to manage the planning, implementation, and monitoring related to the acquisition of use rights for additional land to implement airport safety standards, as well as compensation for damage on airport-affected land. Once again, CAA will let the Department of Lands and Physical Planning prepare the LIRs for state alienation of land. Local authorities, including the provincial government, district administrators, and local government ward councilors, will assist the program (and the Department of Land and Physical Planning) by leading community consultations.

14. During project 1 of the investment program implementation, a training program will be established within the PIU to build capacity in the following areas: (i) government policies and procedures for the acquisition of customary land, including how the MOA process can complement state acquisition of land (it is also anticipated that CAA will request to have a lands officer seconded to the PIU of the investment program); (ii) ADB policies and procedures for land acquisition and compensation; (iii) the application of the Government's and ADB's policies and procedures to the requirements of the investment program; and (iv) other technical support related to, among others, surveys and data collection to prepare document management system and LIRs, community consultations, and awareness programs. The training will target people from CAA and the PIU, provincial and district lands officers in all national airport provinces, relevant staff of the valuer general, and any other organizations involved in land acquisition and compensation activities. A key objective of the training program will be to establish sufficient training capacity within CAA, the investment program, and the Department of Land and Physical Planning to implement training sessions for provincial and district officials for subsequent tranches. The PIU will also provide financial support for the fieldwork, for example, the conduct of detailed document management system or the preparation of LIRs.