

Validation Report
December 2017

Papua New Guinea: Lae Port Development Project

Reference Number: PVR-540
Project Number: 40037-013
Loan Numbers: 2398, 2399, 2803, 2804, 8237
Grant Numbers: 0102, 9113

Independent
Evaluation  ADB

Raising development impact through evaluation

ABBREVIATIONS

ADB	–	Asian Development Bank
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
GDP	–	gross domestic product
IPBC	–	Independent Public Business Corporation
JFPR	–	Japan Fund for Poverty Reduction
m	–	meter
OCR	–	ordinary capital resources
OFID	–	OPEC Fund for International Development
PMU	–	project management unit
PNG	–	Papua New Guinea
PNGPCL	–	PNG Ports Corporation Limited
PPMS	–	project performance monitoring system
PPP	–	public–private partnership
PPTA	–	project preparatory technical assistance
rt	–	revenue ton
TEU	–	twenty-foot equivalent unit

NOTE

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

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PROJECT BASIC DATA

Project Number	40037-013	PCR Circulation Date	3 May 2017		
Loan Numbers	2398, 2399, 8237, 2803,2804,	PCR Validation Date	Dec 2017		
Grant Numbers	0102, 9113				
Project Name	Lae Port Development Project				
Sector and Subsector	Transport	Water transport (nonurban)			
Strategic Agenda	Inclusive economic growth				
Safeguard Categories	Environment		A		
	Involuntary Resettlement		A		
	Indigenous Peoples		C		
Country	Papua New Guinea		Approved (\$ million)	Actual (\$ million)	
ADB Financing (\$ million)	ADF: 40.00 (Loan 2399) 4.12 (Loan 2804)	Total Project Costs	197.37	195.27	
	OCR: 60.00 (Loan 2398) 85.00 (Loan 2803)	Loan 2398	60.00	60.00	
		2399	40.00	38.42	
		(SDR equivalent, million)	(25.242)		
		AF 2803	85.00	84.98	
		AF 2804	4.12	4.06	
	(SDR equivalent, million)	(2.65)			
Borrower		94.10	115.10		
Beneficiaries		-	-		
Others (TA)		-	-		
Cofinancier	OFID JFPR SIDA	Total Cofinancing			
		Loan 8237	6.00	6.00	
		Grant 9113	1.50	1.16	
		0102	0.75	0.65	
Approval Date	Original AF	18 Dec 2007 10 Nov 2011	Effectiveness Date		
			Loan 2398	10 Sep 2008	30 Oct 2008
			2399	10 Sep 2008	30 Oct 2008
			8237		27 Jan 2009
			AF 2803	29 Jul 2012	21 Jun 2012
			AF 2804	29 Jul 2012	21 Jun 2012
			Grant 0102		18 Dec 2007
			9113		12 Jun 2008
Signing Date	Original AF	12 Jun 2008 30 Apr 2012	Closing Date		
			Loan 2398	30 Jun 2012	30 Jun 2016
			2399	30 Jun 2012	30 Jun 2016
			8237		30 Jun 2014
			AF 2803	31 Dec 2014	30 Jun 2016
			AF 2804	31 Dec 2014	30 Jun 2016
			Grant 0102		25 Feb 2016
			9113		4 Dec 2015
Project Officers	F. Ramos H. Haider J. Pethhawadu A. Lee M. Ingratubun	Location PNRM PNRM PNRM PNRM PNRM	From	To	
			Jan 2013	Apr 2017	
			Jul 2015	Jun 2016	
			Jul 2012	May 2013	
			Jan 2011	Jan 2013	
Apr 2013	May 2016				
IED Review					
Director	N. Subramaniam, IESP				
Team Leader	T. Yokota, Senior Evaluation Specialist, IESP*				

ADB = Asian Development Bank, ADF = Asian Development Fund, AF = additional financing, IED = Independent Evaluation Department, IESP = Sector and Project Division, JFPR = Japan Fund for Poverty Reduction, OFID = OPEC Fund for International Development, OCR = ordinary capital resources, PCR = project completion report, SDR = special drawing rights, SIDA = Swedish International Development Cooperation Agency, TA = technical assistance.

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I. PROJECT DESCRIPTION

A. Rationale

1. The economy of Papua New Guinea (PNG) is dependent on trade, exports in particular, which rose from \$985 million to \$2.5 trillion during 1980–2004. Exports increased from 35% of gross domestic product (GDP) in 1986 to 48% in 2002, even increasing by more than 50% for some years. Imports exhibited moderate growth at about 30% of GDP. Coastal trade, particularly outbound container cargo from Lae Port to other PNG ports, had been growing since 2001, with full outbound container volume of 13,395 twenty-foot equivalent units (TEU) in 2001, increasing to 23,811 TEU by 2005 or an increase of 78%.

2. Lae Port handles about half of the throughput of PNG's 22 ports and more than 60% of the international and coastal trade registered under the Lae state-owned port operator—the PNG Port Corporation Limited (PNGPCL)—which operates 16 of PNG's 22 ports. Lae Port generates more than 50% of PNGPCL's revenue. It also serves as a gateway that links the world market to a large PNG hinterland comprising Morobe Province, Morobe's capital city of Lae—which is PNG's industrial and commercial center—and five resource-rich provinces in the highlands. This hinterland is home to about half of the population and covers half of the territory. In 2005, about 50% of PNG exports, including 90% of PNG coffee exports, were shipped from Lae Port.

3. Investment in facility maintenance and expansion at Lae Port had not kept pace with the growing trend toward containerization and larger vessels, with the existing five berths aging and unable to handle increased cargo volumes and ship sizes. Frequent port congestion imposed high costs on port users. By 2005, all vessel classes reportedly spent 210 days waiting for a berth, with some vessels beginning to bypass the port. Other vessels are considering imposing congestion charges in the range of \$200–\$250 per TEU, translating into higher costs for importers, exporters, consumers, and the general economy and posing an issue on compliance with the International Shipping and Port Security Code. As the principal gateway for PNG, delays at Lae Port had a cascading effect on other ports.

4. The government's National Transport Development Plan 2006–2010 listed priority investment projects that included the Highlands Highway (the land route from Lae to the Highlands region) and the Lae Port at the top of the list. In 2006, the government requested for a project preparatory technical assistance (PPTA) to prepare a feasibility study.¹ In 2007, the Board of Directors of the Asian Development Bank (ADB) approved (i) a \$60 million ordinary capital resources loan; (ii) a \$40 million equivalent Asian Development Fund loan, including the administration of (a) a \$6 million OPEC Fund for International Development (OFID) loan; (iv) a \$1.5 million Japan Fund for Poverty Reduction (JFPR) grant; and (v) a \$0.75 million HIV/AIDS Cooperation Fund grant—all of which to finance a \$154 million Lae Port expansion project.² After the loans were approved, additional geotechnical investigations (beyond the scope of the PPTA) were carried out, resulting in design changes and an estimated additional cost of \$137.4 million. To meet these cost increases, in 2011, ADB approved an ordinary capital

¹ ADB. 2006. *Technical Assistance to Papua New Guinea for Preparing the Lae Port Development Project—Tidal Basin Phase I*. Manila (TA 4793-PNG).

² ADB. 2007. *Report and Recommendation of the President to the Board of Directors—Proposed Loans, Administration of a Loan from the OPEC Fund for International Development, and Administration of a Grant from the Cooperation Fund for Fighting HIV/AIDS in Asia and the Pacific: Papua New Guinea: Lae Port Development Project*. Manila.

resources and an Asian Development Fund loan totaling \$89.12 million.³ The project is the first phase of the tidal basin master plan and is also part of the blueprint drawn up by the Morobe Provincial Government to promote industrial development in Lae City. The Independent Public Business Corporation (IPBC) was the executing agency. The implementing agency for the port works was an IPBC-led steering committee while the livelihood and social improvement program was implemented by the Morobe Provincial Administration. A project completion report (PCR) for the four ADB loans, the OFID loan, and the HIV/AIDS Cooperation Fund grant was prepared in 2017 and is the subject of this validation.⁴

B. Expected Impacts, Outcomes, and Outputs

5. The project's expected impact was the creation of an enabling environment for industrial and commercial development by 2020, with a target of 15–20 new industrial and commercial enterprises established and 500–1,000 jobs created. The project's expected outcome was relief from port bottleneck that is constraining trade with the following targets: (i) 1.4 million revenue tons (rt) per year of increased handling capacity upon completion, (ii) cargo handling rate increased from 140 tons per hour to 210 tons per hour by 2015, and (iii) ship calls increased from 600 to 900 by 2017. The project's impact, outcomes, and outputs were the same for both the 2007 and 2011 approvals. The targeted output indicators were updated in the 2011 ADB loan approvals as follows: (i) operation of new port facilities, targeting construction completion by 2014; (ii) improved livelihood of directly and indirectly affected people, targeting 10 expanded community centers by 2013, \$40,000 microcredit provided to 200 households by 2014, and income levels of resettlers and Labu people increased by 3%–5% by 2014; and (iii) reduced incidence of HIV/AIDS in Lae, targeting a 20% decrease in the prevalence of HIV/AIDS in Lae and Huon district.

C. Provision of Inputs

6. The original loans for the project were approved on 18 December 2007. Loan effectiveness was expected 10 September 2008 but actual effectiveness was 30 October 2008. The closing date for the original loans was expected on 30 June 2012 but actual closing date was 30 June 2014 for the OFID loan and 30 June 2016 for the ADB loans. The closing date for the original loans was extended to 31 December 2014 with the approval of the additional financing; two further extensions for an additional 18 months extended the closing. The additional financing loans were approved on 10 November 2011 and became effective on 21 June 2012, ahead of the 29 July 2012 target. The additional financing loans also closed 30 June 2016, following two extensions from the planned 31 December 2014 closing date. Pre-construction activities, such as detailed engineering design, prequalification, tendering, and awarding of contracts began in January 2007, but were suspended due to resettlement implementation delays. Following international competitive bidding, a single design-and-build contract for the reclamation, berth, and terminal works was awarded to the Korean Engineering Consultants Corporation and signed on 29 December 2011. Civil works were awarded to the China Harbor Engineering Company. Works started in April 2012 and were substantially completed in December 2014. The IPBC commissioned an audit to identify defects prior to the closure of the defect-liability period on 31 December 2016. Defects were identified in the stability of the slope-protection works, which was rectified, and in the higher than expected levels of siltation, which had been identified as a

³ ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loans to Papua New Guinea for Additional Financing: Lae Port Development*. Manila.

⁴ ADB. 2017. *Project Completion Report: Lae Port Development Project (Papua New Guinea) (Loans 2398, 2399, 2803, 2804, and 8237; and Grant 0102)*. Manila.

risk at the feasibility study stage.⁵ The total project cost was \$310.4 million, an increase of 7% over the \$291.4 million 2011 revised estimate.

7. At appraisal, 729 person-months of consulting services were estimated to be required—291 person-months for international and 438 person-months for national consultants—to support the project management unit (PMU) in port engineering and contract management, financial management, resettlement, socioeconomic monitoring, and in construction supervision and environmental monitoring. No data on the actual number of international and national consultants mobilized under the project was provided at the PCR, although the PCR indicated that actual consulting services cost was \$11.2 million, which is a 17% increase from the \$9.6 million appraisal estimate.

8. The project was classified category A for environment, in accordance with the ADB safeguards policy. The project involved clearing about 120 hectares of bush, and dredging and reclaiming some 6.5 million cubic meters of unsuitable and suitable materials. A full environmental impact assessment was carried out under the PPTA.

9. The project was classified category A for involuntary resettlement in line with the ADB Involuntary Resettlement Policy (1995). The project required the acquisition of 120 hectares of government-owned marshland occupied by 482 households (with 2,912 people), and an all-weather small-craft landing site with an associated market about 2 kilometers away, used by three Labu villages. Two major stakeholders, the Labu and the Ahi peoples, formed a Bulo Committee to coordinate the views of different clans on this issue. A full resettlement plan defined entitlements, project interventions, and implementation arrangements on the basis of a comprehensive socioeconomic survey and the concerns of the Labu and the Ahi peoples. In the 2007 appraisal, the cost was estimated at \$6.7 million for resettlement, livelihood, and social improvement. No impact was expected for indigenous peoples.

10. The 2007 resettlement plan was not implemented due to disputes with the host community over land ownership, cultural differences, and the inability of the Morobe Provincial Government to find affordable alternative land. The IPBC, in consultation with the affected persons, prepared a supplementary resettlement plan to implement a cash assistance package and in-kind transitional support. The package allowed physically displaced persons to self-relocate to areas of their choice and assisted affected persons wanting to return to their provinces, reintegrate into their clans, and start their own income-generating activities. The supplementary resettlement plan defined the livelihood impacts on the Labu people residing about 2 kilometers from the project area. An additional modification to the 2007 plan was to construct a new small-craft landing site within the Lae Port premises. The original plan was to acquire new land, which was not possible. As an interim measure, the area was upgraded and improved to make it safer and more convenient for the Labu people to land and access the area's services such as market and schools. The new landing site was approved on 23 November 2016 for implementation from January to December 2017.⁶

⁵ The IPBC-commissioned audit detected the following defects: (i) The design change specifications for slope protection required random placement of the "Chinese" pods. However, these pods were placed in a symmetrical fashion above sea level for aesthetic reasons, affecting the stability of the slope protection along the meeting line between the regular and the random placements. This deviation was undertaken without IPBC's approval but was corrected by the contractor at its own expense; and (ii) The feasibility study indicated the potential danger of siltation. IPBC engaged a firm to study the siltation issue and that firm concluded that siltation to the level of 11 meters (m) below chart datum from the dredged 14 m below chart datum occurred at the western entrance to the basin. However, this siltation had not increased for over 1 year and seemed to have stabilized.

⁶ The action plan included detailed consultations with the Labu people, review of the current memorandum of

D. Implementation Arrangements

11. As envisaged at appraisal, the IPBC was the executing agency.⁷ It set up and maintained a fully staffed and adequately funded PMU led by a project director and comprised three divisions—engineering and contract management, resettlement and environment, and finance and administration. The PMU had adequate financial authority and managed construction supervision and civil works contracts to ensure progress and timely completion of the project. A project steering committee (PSC) was established, which oversaw project implementation and provided policy guidance. It was chaired by IPBC's managing director, with the director of IPBC's infrastructure planning and development division as secretary. The other members were senior representatives from the departments of National Planning and Monitoring, Treasury, Justice and Attorney General, Lands and Physical Planning, Transport, Environment and Conservation, Independent Consumer and Competition Commission, Morobe Provincial Government, the chairperson of PNGPCL's board of directors, and its chief executive officer.⁸ The PSC met at least quarterly and ADB was provided with minutes of the meetings.

12. The Morobe Provincial Administration was the implementing agency for the livelihood and social improvement program financed by the JFPR. The HIV/AIDS awareness and prevention program was financed by the HIV/AIDS Cooperation Fund. Disbursements and financial management were centralized in the PMU.

13. The PMU's finance section was directly supervised by the project director, contrary to the initial design. The PNGPCL expected that it would be the project's executing agency, based on the loan's fact-finding mission report.⁹ Subsequently, it was recognized that it had never implemented a project of the proposed size. The pre-appraisal mission report showed ADB's concern on the financial and technical capacity of PNGPCL and noted the following: (i) It could not obtain for 10 years clean auditor's opinions; (ii) It was projected that PNGPCL would experience cash flow problems over the construction period; (iii) PNGPCL had not demonstrated technical capacity to implement the project; (iv) PNGPCL created the PMU, but a project director could not be identified internally; and finally, (v) PNGPCL's systems were highly bureaucratic and inefficient.¹⁰ The PCR noted that the IPBC was selected as the executing agency although it had limited capacity. Based on the results of the loan's fact-finding mission report of 16 April 2007, it was considered to have a better potential in mobilizing a team of professional staff for the PMU. IPBC had the function of holding and monitoring corporations for state-owned assets and majority state-owned enterprises; and planning, coordinating, and managing the state's assets,

understanding by the Morobe Provincial Government and relevant stakeholders, and construction of a new jetty at a suitable site with breakwaters, a fish market, transit terminal, and fuel voucher outlet.

⁷ The IPBC, now Kumul Consolidated Holdings, was formed by the Government of Papua New Guinea under an Act of Parliament (2002, amended in 2012) for the benefit of the state, and to act as the trustee owner and all-encompassing authority for the state-owned assets and enterprises. www.kch.com.pg

⁸ PNGPCL is a state-owned entity whose ownership is vested in trust with the Kumul Consolidated Holdings, formerly IPBC, on behalf of the Government of PNG. One of the oldest state-owned entities in PNG, it has sole authority over all declared ports in the country, and manages 15 of the 23 declared ports in PNG. PNG Ports is vested with a delegated authority by the Department of Transport to provide harbor management and maritime compliance responsibilities at all land and/or water interfaces (wharves and jetties), and in declared and non-declared ports and harbors throughout the country. Essential port services are regulated by the Independent Consumer and Competitions Commission (ICCC) under a regulatory contract that is currently in force until the end of 2014. The regulatory contract specifies a price path for charging prices for all essential port services (i.e., Berthage, Berth Reservation and Wharfage). <http://www.pngports.com.pg/index.php/about-png-ports>

⁹ ADB (Pacific Regional Department). 2007a. Fact-Finding Mission to PNG: Lae Port Development Project. Back-to-office report. 16 April 2007 (internal).

¹⁰ ADB (Pacific Regional Department). 2007. Loan Pre-Appraisal Mission to PNG: Proposed Lae Port Development Project. Back-to-office report. 21 September 2007 (internal).

infrastructures, and projects. It had a clean financial statement, a stronger financial position than PNGPCL, and a stable and good management in place.

14. The PCR recognized that PNGPCL's participation during implementation was critical and a serious institutional oversight since PNGPCL would operate and maintain the project facilities at completion. However, PNGPCL did not actively participate during implementation. This validation notes that PNGPCL representation in the PSC should have been a chance for its improved implementation participation, but PNGPCL's nonparticipation in PSC meetings precluded reaching a compromise on this aspect.

15. Of the 26 loan covenants, 18 were complied, four were not fully complied, and four were not complied. The following covenant were not complied: (i) within 3 months of loan effectivity, the borrower should have set up the PSC, which was to meet at least quarterly.¹¹ The PSC first met on 25 May 2010 and officially convened only four times during project implementation; (ii) on 2 April 2015, with the government's approval but without ADB consent, IPBC handed over the operation of the new project facilities to PNGPCL. Although ADB formally raised this matter with IPBC and the government in a letter to IPBC dated 20 April 2015 and a letter to the Department of Treasury dated 16 February 2016, in addition to numerous e-mails and verbal follow-ups, no response came forward; (iii) while the borrower submitted a port operational plan (PCR, para. 26), it did not submit an action plan to develop a strategic public-private partnership (PPP) model for the operation of the new facilities. Currently, a coastal shipping company operates the facilities on a 3-year lease; and (iv) IPBC did not establish the project performance monitoring system (PPMS), which was cited as a noncompliance issue in aide-mémoires and in a memorandum of understanding as part of ADB review missions. This noncompliance was mainly a result of capacity constraints.

16. The four covenants that were not fully complied were (i) no rights or obligations under the Subsidiary Loan Agreement shall be assigned, amended, or waived without the prior concurrence of ADB; (ii) within 3 months of the effectiveness date, the borrower shall establish the PSC and shall ensure that the committee meets at least on a quarterly basis and provides ADB with the minutes of such meetings; (iii) the new small-craft landing facility and fish market in SP Beach shall have been fully developed and operational, prior to the acquisition of the existing small-craft landing site and associated fish market in Sandaun Market for the purpose of the project; and (iv) ADB and IPBC shall agree upon a system for monitoring and evaluating project performance in relation to its goals and purposes, with an emphasis on trade, economic activities, job creation, and livelihood improvement. The reporting requirements were not fully complied during implementation and after project completion.

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

17. The PCR rated the project relevant to the development policies and strategies of the government and ADB. The government's National Transport Development Plan, 2008–2010 listed the Lae Port project as a core national project. The Highlands Highway and Lae Port were considered key drivers of growth, development, and poverty reduction. The project is consistent with ADB and the government's development strategies for PNG, which focused on

¹¹ ADB. 2008. *Loan Agreement for Lae Port Development Project between the Government of Papua New Guinea and Asian Development Bank*. Manila (Schedule 5, para. 2).

transport sector improvement, private sector development, and HIV/AIDS reduction, with poverty reduction and inclusive growth as overarching goals.

18. This validation notes that the project is also aligned with PNG's National Development Strategic Plan¹² specifically to its National Transport Strategy.¹³ On a separate issue, this validation notes the lesson given by the PCR citing that the selection of the executing agency should be carefully assessed during project preparation as the selection of IPBC led to a lack of participation during implementation by the port operator, PNGPCL. The PCR noted that as the entity responsible for the development, management, and maintenance of all of PNG's declared ports, PNGPCL should have had a more active role even if it was not the project's executing agency. PNGPCL's commitment to the project had been limited and it did not contribute to, or participate in, PSC meetings to highlight concerns that it subsequently raised when the new facilities were handed over to it. The PCR noted that ADB was aware of these institutional issues and advocated for PNGPCL's more direct involvement during implementation, but close cooperation between IPBC and PNGPCL did not materialize.

19. This validation notes that both at appraisal and in the PCR, PNGPCL's capacity to operate the project facilities was constrained by a shortage of skills, with only four engineers on its staff—two at the office in Lae and two at its head office in Port Moresby. The project design may have benefited from including a capacity-building component for PNGPCL as either future operator or manager of the facilities to support the achievement of the cargo-handling rate outcome target.

20. The loan fact-finding mission in 2007 identified resettlement as the project's paramount risk.¹⁴ However, it was optimistic that out of the anticipated project experience, the government and ADB would be able to develop a model for resettling illegal settlers on communal and government lands that is acceptable to all and could be replicated in future projects. A full resettlement plan was prepared with a 100% socioeconomic survey carried out for the illegal settlers. A supplementary resettlement plan acceptable to the affected communities had to be prepared, causing further implementation delays.

21. The PCR also noted that the 2007 approval project design called for a further deepening of the tidal basin from 11 meters (m) below chart datum to 14 m below chart datum, an increase in the length of the first berth from 180 m to 240 m; and modifications for the wharf, deck, and container yard to accommodate heavier handling equipment and to enable higher stacking of containers. Additional geotechnical survey was required but not undertaken until after the loan was approved, materially impacting the project's timetable and costs. Thus, the combination of design changes and resettlement issues caused substantial delays in implementation. The inclusion of the HIV/AIDS component was also important to the local situation. Recognizing the project's complexity, the continued effort to refine its design and complete the revised implementation, and the project's importance to PNG, this validation rates the project relevant.

B. Effectiveness in Achieving Project Outcomes and Outputs

22. The PCR rated the project less than effective in achieving its outcomes. The project had relieved port capacity constraints, and it will eventually catalyze industrial and commercial

¹² Government of Papua New Guinea, Department of National Planning and Monitoring. 2010. *Papua New Guinea Development Strategic Plan, 2010–2030*. Port Moresby.

¹³ Government of Papua New Guinea, Department of Transport. 2013. *National Transport Strategy*. Port Moresby.

¹⁴ ADB (Pacific Regional Department). 2007. Fact-Finding Mission to PNG: Lae Port Development Project. Back-to-office report. 16 April 2007 (internal).

development in the port area and hinterland. The PCR reported that port capacity available at completion exceeded the targeted 1.4 million rt/year since 2.0 million rt/year capacity was achieved. The cargo handling target of 140 rt/hour–210 rt/hour by 2015 was not achieved, with actual cargo handling performance ranging from 88 rt/hour to 110 rt/hour since 2011. The target of 600–900 ship calls by 2017 was possibly on track to be achieved based on actual 2016 port statistics, which recorded 548 total ship calls at Lae Port comprising 357 coastal vessels and 191 overseas vessels. The lower target of 600 ship calls per year by 2017 may be met.

23. The supplementary resettlement plan showed that resettlement impacts increased from 482 households (2,912 persons) to 544 households (3,200 persons). Each household received K31,116 in two installments, after signing a deed of release and indemnity and vacating the premises, with releases totaling K16.9 million. Households staying in Lae District were assisted with a fixed amount of K1,000 per household to cover transport costs. Households that returned to their home provinces outside Lae were provided with transport assistance to move their belongings. Of those people affected, 61% (1,785 persons) settled within Morobe Province and the remainder moved to their preferred provinces.

24. Indirect assistance, through improvement of the existing school and health facilities in several host communities within Morobe, was provided through Grant 9113 from the JFPR. Through the project, 23 existing school and health facilities were upgraded. However, the PCR noted that the overall effectiveness of the resettlement plan, livelihood component, and indirect assistance could not be ascertained due to the absence of recent surveys. The HIV/AIDS component was implemented by the Lae Chamber of Commerce, familiarizing local businesses with precautionary measures and disseminating information through seminars, flyers, and brochures; outreach was expanded beyond the port-related industries to include other businesses and public areas. Only two out of five target clinics were built because the Lae Chamber of Commerce lacked the capacity to manage procurement and civil works. Recent statistical data on the incidence of HIV/AIDS in the project area was not available. The microcredit program was not implemented but was replaced by training on financial literacy under a separate ADB-funded microfinance program to help individuals find loans.¹⁵

25. This validation also notes that IPBC did not operationalize the PPMS to monitor the achievement of outcomes and impacts, other than design and monitoring framework in the report and recommendations of the President. This resulted in the absence of outcome and impact performance indicator data in the PPMS.

26. Based on the above information, this validation concurs with the less than effective PCR rating of the project.

C. Efficiency of Resource Use

27. The PCR rated the project less than efficient. While Lae Port traffic had increased due to the impacts of the liquefied natural gas project, port traffic, as a whole, had subsequently decreased. With the traffic forecast and GDP growth that are lower than assumed at appraisal, the recomputation of the project's economic internal rate of return (EIRR) was affected. PNG's economic prospects are now seen to be less buoyant than at appraisal with growth rates estimated in the PCR at 4.3% for 2016 and 2.4% for 2017. Given that the world prices of copper, gold, and oil have declined, activities in these industries would be constrained, significantly

¹⁵ ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Papua New Guinea for the Microfinance Expansion Project (Loan 2686 PNG)*. Manila. The project has its operations in Lae.

affecting the traffic volume of Lae Port as indicated by the lower port traffic forecast in the PCR, which was revised from the 6% assumed at the 2012 appraisal to reflect the actual growth rate of 3%.

28. Compared to appraisal cost estimates, actual project cost increased due to (i) increase in civil works costs (116%), (ii) consulting services costs (17%), and (iii) involuntary resettlement costs (3,590%).¹⁶ The project's recomputed EIRR in the PCR—utilizing the approach at appraisal for 2007 and 2012—was 13% (12% if all dredging costs were included and the 11% traffic growth is reduced to 4%). This was a decrease from the EIRR of 15.8% and 18.7% in the 2007 and 2012 reappraisal, respectively, which was attributed to the lower traffic forecasts. The 2012 reappraisal assumed traffic would grow annually by 6% from 2011 or 18% in total by 2015. However, by 2015, actual traffic grew only by 3%. The lower port traffic forecast and replacement of small vessels with larger oceangoing ships resulted in lower ship calls and sea trade.

29. This validation notes two major issues in the identification, calculation of benefits, and comparison of EIRRs at appraisal and in the PCR. First, the benefits quantified at appraisal and in the PCR were not the same.¹⁷ At appraisal, savings in congestion cost and lighterage costs were directly attributed to the project facilities. In the PCR, benefits from vessel waiting and service time (savings in congestion costs) are accepted benefits of port projects. Congestion cost at appraisal included inventory costs, which had computational difficulties and required data not readily available in PNG. The estimate of lighterage cost savings was also subject to data availability and computational issues. In both cases, it was not clear at appraisal how the inventory and lighterage savings were estimated. In the PCR case, estimate in vessel waiting and service time savings was quite straightforward and valid.

30. Second, on the other benefits identified at appraisal—such as diverted transshipment, additional shipping value added, productivity gains on exports from coastal areas, and productivity gains on items shipped to coastal areas for coastwise trade—these were not adequately explained as to their method of estimation, and attribution issues. The appraisal considered the flow-on benefits from the additional international and coastal shipping as key to project viability. The larger Lae Port capacity would provide substantial productivity gains for smallholders and other local producers by allowing them to engage in higher-value-added activities, such as the export of agricultural products. The expanded port capacity would also minimize costs in the economy by allowing the import of key items not produced locally. However, these benefits were difficult to estimate, required data may not be available, and these have attribution issues.

31. For the other benefits identified by the PCR—such as inventory savings, additional exports through the project, and development benefits from additional exports—these also have estimation and attribution issues. These require availability of data that are not normally collected in PNG, hence, the need for further validation and audit of results. For example, inventory savings require data on the current inventory of goods by firms and the estimated change in inventory levels due to improved shipping time. These data are hard to collect, which would make any estimate unreliable at best. Additional exports that would be attributable to the project also have measurement issues, i.e., how much of the increase in export volume is due to improved port

¹⁶ The PCR reported cost increases of 162% for civil works and 3,490% for compensation and relocation.

¹⁷ The identified economic benefits at appraisal were (i) savings in congestion cost, (ii) savings in lighterage and diverted transshipment, (iii) additional shipping value-added, (iv) productivity gains on exports from coastal areas, and (v) productivity gains on items shipped to coastal areas. The identified economic benefits in the PCR were (i) waiting and service time savings, (ii) inventory savings, (iii) additional exports through the project, and (iv) development benefits from additional exports.

facilities. In addition, most exports from PNG are subject to the volatility of international prices and demand, such as for minerals and agricultural exports.

32. These other benefits could not be reliably measured due to the absence of data required and may be subject to double counting as well. In general, the PCR did not discuss the differences in the identified benefits and the methodologies used to arrive at these estimates. It did not acknowledge attribution issues for these other benefits and how, if at all, this was resolved.

33. On process efficiency, project implementation was expected to take 4 years. However, preconstruction activities, such as detailed engineering design, prequalification, tendering, and awarding of contracts began only in January 2007, and then suspended due to resettlement implementation delays. Civil works, planned to begin in early 2009, were not started until April 2012 and not completed until December 2014. The project was delayed by approximately 4 years. The delay in resolving the project's right-of-way and the design changes increased the project's investment cost.

34. Given these findings, this validation rates the project less than efficient.

D. Preliminary Assessment of Sustainability

35. The PCR rated the project less than likely sustainable. The PCR's reassessment of the financial internal rate of return (FIRR) was based on the actual financial investment cost adjusted to 2016 prices and the reduction in dredging costs by 50%. It considered incremental operations, maintenance, and insurance costs. The revenues from wharfage, pilotage, storage, and lease of the newly reclaimed land were based on incremental traffic and this was adjusted to the 30% corporate tax for years with positive revenues. In the PCR, the FIRR was reestimated at 1.39% before taxes and 0.25% after taxes—lower than the weighted average cost of capital of 3.19%. A tariff increase of 20% for overseas cargo at Lae Port, an annual concession fee of K28 million, or a combination thereof, was estimated to bring the FIRR at par with the weighted average cost of capital.

36. The PCR was unable to obtain financial data from PNGPCL other than those published in its website until 2013. To assess PNGPCL's financial position, the PCR reviewed assumptions made during the previous appraisals and in the 2010 cost audit, and assessed whether these findings had materially changed. It was determined that PNGPCL would be able to repay the interest and capital portion of the loan to the government, with current port tariffs considered regionally competitive, but could still be increased.

37. This validation finds the data used in estimating the FIRR to be dated and PCR should have exerted more effort through government channels to acquire PNGPCL's financial data. Using the appraisal and 2010 cost audit data did not result in having the latest information on PNGPCL's operations, its current financial situation, and the impact of the completed facilities on its finances.

38. This validation finds the PCR's methodology for reestimating the FIRR to be appropriate, but the use of old data from two previous appraisals rendered the results unreliable and inaccurate. The decline in GDP growth, which affected traffic forecast, should also decrease PNGPCL's revenue.¹⁸ Based on these analyses, this validation rates the project less than likely sustainable.

¹⁸ Footnote 4. See Supplementary Appendix A.

III. OTHER PERFORMANCE ASSESSMENTS

A. Preliminary Assessment of Development Impact

39. The PCR rates the project's impact satisfactory. The PCR assessment rating was based on the project's relieving port congestion and that there was no lasting negative environmental impact. However, there was no evidence that the impact indicators of establishing 15–20 new industrial and commercial enterprises and creating 500–1,000 jobs were accomplished. Thus, the targeted impact of creating an enabling environment for industrial and commercial development may not have been met. The PCR indicated a few socioeconomic impacts that were not in the design and monitoring framework, such as better access to water and electricity, particularly for those relocated within Lae (PCR, para. 49) and gender responsiveness of HIV/AIDS component. On the whole, this validation assesses the project's impact less than satisfactory.

B. Performance of the Borrower and Executing Agency

40. The PCR rated the performance of the borrower, IPBC, and the PMU partly satisfactory. The key concern was the executing agency's transfer of assets without ADB consent, contrary to requirements under the loan and project agreement, and the late submission of audited reports for the project accounts. Other than these, the PCR cited only positive actions and accomplishments of the IPBC, such as having implemented and completed the project and having established a project management system. Local funds were mobilized in a timely manner, and the contractor was paid on time, although not without some initial problems. The PMU identified and implemented a supplementary and acceptable resettlement plan and used the delay in project implementation to update the design data.

41. This validation notes that the inexperience of IPBC in implementing a large-scale project may have resulted in prolonged delays in resolving resettlement issues and incurring substantial increase in project costs. It was noted that IPBC failed to comply fully or partially with some loan covenants such as the PPMS not developed and operational.

42. Based on the above, this validation rates the performance of the borrower and the executing agency less than satisfactory.

C. Performance of the Asian Development Bank and Cofinanciers

43. The PCR rated the performance of ADB partly satisfactory. At loan appraisal, ADB was already made aware that the project would require the 1980–1981 engineering design updated at appraisal, and to be revised as needed prior to or during implementation.¹⁹ More detailed technical investigations were to be undertaken to improve the estimate of project investment costs. The PCR noted that ADB was responsive in resolving implementation and financing issues and delegated the project to the PNG Resident Mission, which expedited response time and provided direct advice on procurement, disbursement, and other loan administration issues.

44. This validation notes that at loan appraisal, ADB initially selected PNGPCL as the

¹⁹ ADB. 2006. *Technical Assistance to Papua New Guinea for Preparing the Lae Port Development Project—Tidal Basin Phase I (Financed by the Japan Special Fund)*. Manila. The TA project included the review, assessment, and updating of the Feasibility Study Report and Final Design Report for Lae Port Project done by Nedeco-Haskoning consulting firm in association with Maunsell PNG Pty Ltd in 1980 and 1981 and detailed engineering design, if available. It also covers the conduct of further site investigations, including but not limited to soil and hydrographic conditions, and verifying the technical viability of the project.

executing agency, but subsequently changed this to the IPBC. An ADB reassessment of PNGPCL's capability to implement the project led to IPBC being selected as the executing agency. Given that PNGPCL would eventually operate the project—unless the government pursues the PPP modality for Lae Port operations—a capacity building component or technical assistance for PNGPCL could have enhanced project sustainability.

45. Given that the project was turned over to the PNG resident mission, the delays due to the resettlement issue should have been resolved expeditiously. Also, more efforts could have been exerted to ensure PNGPCL's active participation in the PSC, through effective dialogue.

46. ADB did not frequently follow-up the development and establishment of the PPMS. This would have ensured that data on project impacts, benefits, and port operations would be available and used not only in regular reporting to ADB on project operations, but also in preparing the PCR and the project performance evaluation report. Given the delay in project completion, there was sufficient time for the PPMS to have been established and made operational. Based on the discussion, this validation rates ADB performance less than satisfactory.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

47. Both the PCR and this validation assess the project to be less than successful overall based on the review of its relevance, effectiveness, efficiency, and sustainability. The PCR rated the project relevant as Lae Port is the primary PNG port facility and the major hub for international and domestic sea trade in the country. Given engineering design changes, the port civil works design had to be updated before implementation. This validation concurs with the PCR's rating on relevance. Project implementation was delayed, as the original resettlement plan could not be implemented and a supplementary resettlement plan had to be prepared and implemented. Due to the poor economic situation of PNG, the forecast port traffic level was not achieved and little improvement was attained in cargo handling efficiency, justifying a less than effective rating. The expected growth of the PNG economy was not being achieved and this affected port utilization rate. Project investment cost increased substantially affecting financial and economic viability, leading to a rating of less than efficient and less than likely sustainable. Revenue streams from port operations are now forecast to be lower, with the project's sustainability severely under pressure.

Overall Ratings

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness	Less than effective	Less than effective	
Efficiency	Less than efficient	Less than efficient	
Sustainability	Less than likely sustainable	Less than likely sustainable	
Overall assessment	Less than successful	Less than successful	
Preliminary assessment of impact	Satisfactory	Less than satisfactory	The PCR rating was not supported as data on impacts were not collected.

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Borrower and executing agency	Partly satisfactory	Less than satisfactory	
Performance of ADB	Partly satisfactory	Less than satisfactory	
Quality of PCR		Satisfactory	

ADB = Asian Development Bank, IED = Independent Evaluation Department, PCR = project completion report.

Note: From May 2012, IED views the PCR rating terminology of "partly" or "less" as equivalent to "less than" and uses this terminology for its own rating categories to improve clarity.

Source: Independent Evaluation Department.

B. Lessons

48. The PCR identified three lessons from the project. First, the approval of financing for a project should not be based on preliminary designs, especially when the feasibility study had explicitly indicated the lack of geotechnical data. Second, the resettlement plan, especially in the context of PNG, should have included a comprehensive assessment of the resettlement impacts on both the affected persons and host communities to anticipate potential issues during implementation. The self-relocation plans should also ensure that the cash assistance is used for the intended purpose. Third, the selection of the executing agency should be carefully assessed during project processing. The succeeding paragraphs discuss additional lessons identified under this validation.

49. **Country-level lesson.** None.

50. **Sector-level lesson.** None.

51. **Project-level lesson.** This validation identified additional lessons at the project level. First, the PPMS should be developed and established prior to the start of project implementation. This would ensure that all implementation activities are effectively monitored and causes of delays and mitigating actions described clearly. Benefit monitoring and evaluation is essential to measuring project impact and outcome indicators so as to measure achievement. This should not be left to the executing or implementing agency and should be undertaken by qualified monitoring and evaluation specialists, including the collection of primary and secondary data.

52. Second, the ADB resident mission should be more proactive in monitoring project implementation. It is contingent on the resident mission to assist the executing agency in identifying corrective measures and even use its technical resources to assist in resolving issues. The delay due to unresolved resettlement issues took too long to solve resulting in increased project cost. With local knowledge and experience, the resident mission would be in a good position to identify options in resolving such issues.

53. **Results framework and methodology-level lesson.** None.

C. Recommendations for Follow-Up

54. The PCR made five recommendations. In 2013, IPBC requested for ADB assistance to identify PPP options for the Lae Port. Based on the results of ADB's options study, Lae Port was suited as a PPP facility, with global operators having expressed interest in investing and managing the port. In 2015, IPBC reaffirmed its interest to develop the port as a PPP facility, with

ADB preparing a proposal to provide transaction advisory services to structure, tender, and reach concession signing for the Lae Port under a PPP modality. With the transfer of the facilities to PNGPCL, IPBC decided not to accept the proposed transaction advisory services. With a new Minister and new managing director for IPBC (now Kumul Consolidated Holdings) in March 2017, the government is committed to pursue ADB's proposal for the provision of transaction advisory services. After the national election in July 2017, there was reorganization in the national government and commitments by previous officials became subject for review. In 2017, the International Container Terminal Services Inc. agreed with the government of PNG on a long-term concession to allow the company to operate, manage, and develop two ports in Motukea and Lae. The PCR also recommended additional assistance may be necessary to set up and implement the PPMS, and that ADB should remain involved in the proposed Phase 2 expansion of the port. The PCR recommended that the disbursement covenant on civil works payments needs to account for the time required for processing, which may be beyond the stated project implementation period; monitoring covenants should be extended for an additional 5 years beyond implementation. The PCR also recommended that ADB clarifies the terms of the handover from IPBC to PNGPCL to ensure the financial viability of PNGPCL in operating the port facilities and in servicing the port's debt. Finally, a project performance evaluation report should be undertaken at the end of 2019.

55. This validation supports these recommendations while noting that it is not clear from the information in the PCR that the handover conditions from IPBC to PNGPCL impacted the project's financial viability.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Reporting

56. The loan covenant requiring the establishment of PPMS was not complied with, and given its importance in monitoring Lae Port's management and operations and in preparing a possible project performance evaluation report in the future, ADB should follow up on its development and implementation. As experienced by the PCR team, it was unable to acquire port operations and financial data, which affected PCR outputs.

B. Comments on Project Completion Report Quality

57. The PCR provided a clear and concise description of project implementation activities, issues, and problems. It analyzed well the issues that had arisen, with timely and occasional references to events prior to project implementation such as the inadequacy of the port design (that was based on a 1982 design). The issue on the selection of the executing agency was noted. This validation finds and rates the PCR quality satisfactory.

C. Data Sources for Validation

58. The data sources for this validation included the project's report and recommendation of the President, the PCR, back-to-office reports, Country Partnership Strategy 2011–2015 and 2016–2020, PNG medium-term development plans, the Bank of PNG *Quarterly Economic Bulletin*, PNG National Transport Strategy, and PNG Medium Term Transport Plan.

D. Recommendation for Independent Evaluation Department Follow-Up

59. No further IED follow up is recommended.