

**REPORT AND RECOMMENDATION  
OF THE  
PRESIDENT  
TO THE  
BOARD OF DIRECTORS  
ON A  
PROPOSED LOAN  
TO  
PAPUA NEW GUINEA  
FOR THE  
COMMUNITY WATER TRANSPORT PROJECT**

**February 2004**

## CURRENCY EQUIVALENTS

(as of 30 January 2004)

Currency Unit	–	kina (K)
K1.00	=	\$0.31
\$1.00	=	K3.23

## ABBREVIATIONS

ADB	–	Asian Development Bank
AusAID	–	Australian Agency for International Development
DOT	–	Department of Transport
DOW	–	Department of Works
EA	–	executing agency
GDP	–	gross domestic product
GMDSS	–	Global Maritime Distress and Safety System
GPS	–	global positioning system
IMO	–	International Maritime Organization
MSB	–	Maritime Safety Branch
MTD	–	Maritime Division
NMSA	–	National Maritime Safety Authority
OPEC Fund	–	OPEC Fund for International Development
PMU	–	project management unit
PNG	–	Papua New Guinea
SDR	–	special drawing rights
TA	–	technical assistance

## NOTES

- (i) The fiscal year of the Government coincides with the calendar year.
- (ii) In this report, "\$" refers to US dollars.

This report was prepared by T. Gloerfelt-Tarp.

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## LOAN AND PROJECT SUMMARY

<b>Borrower</b>	Papua New Guinea
<b>Classification</b>	Poverty Classification: Poverty intervention Thematic: Sustainable Economic growth
<b>Environment Assessment</b>	Category: B. An initial environmental examination was undertaken, and its summary is a core appendix.
<b>Project Description</b>	The Project supports implementation of a sector reform program and establishment of a National Maritime Safety Authority (NMSA). It also establishes a trust fund that provides a source of financing for a subsidy required for provision of water transport to remote and disadvantaged communities, restores water transport infrastructure, improves small-craft safety, and induces the ability of the affected communities to maximize the benefits of the transport provided.
<b>Rationale</b>	<p>The living standards of Papua New Guinea's remote maritime and river-based communities are deteriorating and the incidence of poverty is increasing. These communities experience extremely constrained transport conditions. They consequently lack adequate supplies, staple foods, and access to educational and health services. They only occasionally trade in primary goods in small quantities due to the unaffordable transport prices. The Government, the private sector, and civil society as a whole have recognized the need to improve maritime and river-route transport.</p> <p>Papua New Guinea is implementing a maritime sector reform program that focuses on improving sector effectiveness, efficiency, safety, and delivery of services to rural communities. The sector reforms will establish appropriate and sustainable maritime safety functions within a statutory NMSA, a self-funding and performance-based organization with sustainable cost recovery and effective systems to support development of the maritime sector and its contribution to poverty reduction.</p>
<b>Objectives</b>	The Project will (i) directly reduce poverty of the marginalized and remote maritime and river-based communities by financing a catalytic, temporary subsidy where cash incomes do not support a regular transport service, and (ii) promote effective sector governance through establishment of the NMSA. The project scope includes (i) establishing a Community Water Transport Trust Fund (CWTF) that finances the required water transport subsidy, (ii) restoring water transport infrastructure, (iii) improving small-craft safety, (iv) maximizing utilization of water transport through community support services, (v) implementing maritime sector reforms and establishing the NMSA, and (vi) providing

project management services.

<b>Cost Estimates</b>	The total project base cost is estimated at \$25.7 million. The total cost of the proposed Project, including taxes, duties, and interest during construction (IDC), is estimated at \$28.1 million, of which the foreign exchange cost, including IDC, is about \$18.5 million (66%) and the local currency cost (including taxes and duties) is about \$9.6 million (34%).
<b>Financing Plan</b>	Asian Development Bank (ADB): \$19.0 million. OPEC Fund for International Development: \$4.0 million. Government direct financial resources: \$5.1 million equivalent.
<b>Loan Amount and Terms</b>	A loan will be in an amount equivalent to SDR12.83 million, from ADB's Special Funds resources, to finance approximately 67% of the cost of the Project. The loan will have a maturity of 32 years, including a grace period of 8 years, and an interest charge of 1% during the grace period and 1.5% during the amortization period.
<b>Period of Utilization</b>	Until 30 June 2012.
<b>Estimated Project Completion Date</b>	31 December 2011.
<b>Implementation Arrangements</b>	The Department of Transport (DOT) will establish a project management unit to handle daily activities of the Project and a steering committee with stakeholder representation to monitor the Project.
<b>Executing Agency</b>	DOT will be the executing agency.
<b>Procurement</b>	Three procurement contract packages have been identified: (i) facilities for the NMSA including computers, printers, copiers, fax machines, telephones, software, vehicles, and furniture; (ii) civil works for small infrastructure; and (iii) radio equipment. These will be awarded through international competitive bidding or local competitive bidding, and international shopping in accordance with ADB's <i>Guidelines for Procurement</i> .
<b>Consulting Services</b>	The Project requires international and domestic consulting services for (i) project administration, (ii) community development, (iii) small-craft safety, and (iv) civil engineering and supervision. Advance procurement action for the selection of the project management consultants has been approved to enable implementation of the project activities in accordance with the implementation schedule. Consulting services will be engaged in accordance with ADB's <i>Guidelines on the Use of Consultants</i> and other procedures acceptable to ADB for the selection of domestic consultants.

**Project Benefits and Beneficiaries**

The Project will result in direct and indirect social and economic impacts on remote maritime and river communities through provision of improved access to services and markets. It will also improve seafaring safety for coastal vessels including small craft through establishment of an accountable sector agency, sector management capability, and improved and safer landing infrastructure.

The Project will improve the living standards of Papua New Guinea's remote maritime and river-based communities that are currently nearing absolute poverty. The sector restructuring program initiated by the Government will enhance sector governance and enable effective and transparent management of water transport franchise schemes and delivery of maritime safety services. The Project will enable the provision of private sector transport services to remote and poor communities and will reduce the transport constraint experienced by the communities. This will lead to reduced cost of transport and increased local income from trade in primary goods in the mainstream markets. Reduced transport prices, in turn, will improve the communities' access to supplies, staple foods, and educational and health services, directly reducing poverty. The Project supports the restoration of safe and efficient small water transport infrastructure and establishes a framework for a focused and time-bound maritime safety improvement program that will both reduce frequent loss of life and goods in sea accidents and improve passenger safety.

**Risks and Assumptions**

The main risks associated with the Project relate to timely and adequate counterpart funding, and to outstanding land compensation claims that need to be resolved quickly and amicably.

The major assumptions under the Project are (i) that the return on the trust fund is adequate to fund the subsidies for the franchise routes, and (ii) that rapid economic development will take place once remote locations are serviced by regular transport.



MAP

03/25/2010

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## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan to Papua New Guinea (PNG) for the Community Water Transport Project (the Project); and (ii) the proposed administration by the Asian Development Bank (ADB) of a loan for the Project to be provided by the OPEC Fund for International Development (OPEC Fund).

## II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

2. The Government's macroeconomic and sector policies are established in its Medium Term Development Strategy 1997–2002 (MTDS), draft poverty reduction strategy, and the National Transport Development Plan (NTDP) 2001–2010. The proposed Project implements the Government's strategic plan to provide viable and effective maritime transport sector services to remote and disadvantaged communities. To improve women's and children's health, the Government's National Health Plan also emphasizes the need to improve access to health centers by providing public transportation in remote areas. The project framework is in Appendix 1.

3. With the support of the ADB-funded Functional Expenditure Review,<sup>1</sup> the Government examined the weaknesses in delivery of public maritime safety services. The Government adopted the recommendations of the review and recognized the need for maritime sector restructuring. In the Papua New Guinea country program for 2000, ADB agreed to provide technical assistance (TA) for a sector restructuring action plan.<sup>2</sup> Subsequently, a sector reorganization program was implemented. This program aims to separate the operational responsibilities for maritime services from the Department of Transport (DOT),<sup>3</sup> and to establish an autonomous and efficient National Maritime Safety Authority (NMSA). This institutional framework will enable Papua New Guinea to provide effective maritime safety services for international and local coastal vessels and support community water transport. The Project supports implementation of the sector restructuring by financing the associated facilities and staff retrenchment, and by providing a time-bound framework for accomplishing the reforms. In addition to the Project, the sector reform program relies on continued implementation of the Government's program to rehabilitate the navigation aids on critical routes and establish a hydrographic capability with the support of Loan 1754-PNG: Rehabilitation of Maritime Navigation Aids System Project.<sup>4</sup>

4. The 2001 country program included a feasibility study for the Project.<sup>5</sup> This study identified water transport routes along which communities are subjected to limited, infrequent and expensive transport services. Consequently, these communities experience difficulty in obtaining sustained access to basic necessities. The Project provides resources for the Government to facilitate provision of private transport on these routes. This involves a transparent legal framework for a Community Water Transport Trust Fund (CWTF) that will finance a catalytic subsidy. An initial subsidy is required for the provision of transport services to

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<sup>1</sup> ADB. 1999. *Technical Assistance to Papua New Guinea for the Governance and Public Sector Reform Program*. Manila.

<sup>2</sup> ADB. 2000. *Technical Assistance to Papua New Guinea for the Maritime Sector Restructuring Project*. Manila.

<sup>3</sup> Subsequent to the 2002 Parliamentary elections, in September 2002, the Department of Works and Transport has been divided into two departments under the management of two ministers and two secretaries without other substantive implications. The two departments are now called Department of Works (DOW) and Department of Transport (DOT).

<sup>4</sup> ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Rehabilitation of the Maritime Navigation Aids System Project*. Manila.

<sup>5</sup> ADB. 2000. *Technical Assistance to Papua New Guinea for the Community Water Transport Project*. Manila.

remote communities, as they do not currently have adequate cash incomes to support fares for transport at the level of full operating cost recovery. However, catalyzed by the transport provided with the support of the CWTF and the initial subsidies, these communities are expected to be able to improve their standard of living, earnings, and will eventually be able to afford transport at break-even fares. Accordingly, the Project will have a direct poverty reducing benefit. The Project will, concurrently, support establishment of transparent and effective sector management through the NMSA.

5. A fact-finding mission visited Papua New Guinea in March 2002. A preappraisal mission, approved by the management review meeting on 16 May 2002, was conducted in July 2002 and was subsequently upgraded to an appraisal mission on 5 August 2002. A staff review meeting on 24 October 2002 authorized loan negotiations. Counterpart funding constraints in that year resulted in the deferment of further loan processing until 2003.

#### **A. Performance Indicators and Analysis**

6. Sector and subsector analyses are given in Appendix 2.

##### **1. Current Maritime Sector Governance and Reform Program**

7. DOT, among its functions, is responsible for maritime safety services upon which vessels depend in their daily movements. Its Maritime Transport Division (MTD) has not, however, been able to deliver these services. Maritime navigational safety has seriously deteriorated to the point where about 70% of the navigation aids in PNG operated by MTD are nonoperational. The industry no longer receives public sector support or safety services, and consequently faces increased costs with the private sector providing navigation safety aids (e.g., markers and buoys) on its own. As a result, the private sector is increasingly reluctant to pay maritime services fees, which, in turn, impacts on the Government's ability to finance the sector. Alongside the shortcomings in the maritime safety services, maritime transport services have seriously deteriorated, with vessel operators having to limit voyage routes and schedules. Additionally, MTD is not able to support the development of safe and efficient water transport services. Increasing costs, depreciating local currency, subsequent declining incomes, and, in remote areas, increasing poverty have led to a reduction in coverage of private shipping operations.

##### **2. Remote Water Transport**

8. The availability, frequency, and quality of water transport services in PNG vary significantly, and many rural areas lack economical transport systems for the movement of goods and people. Marine infrastructure is deficient in many coastal and river areas, with wharves and jetties nonexistent or in poor condition, resulting in further reduction of economical and safe water transport. Currently, the services in most areas are unaffordable for the inhabitants of the remote communities and inaccessible without long travel times by foot or other modes. Much of the existing water transport service is provided by small craft with high operating costs and significant safety risks. Water transport safety has become compromised also as a result of overloading, long-distance travel, travel at night and during bad weather, unavailability of markers, lack of safety equipment and communications, and inadequate search and rescue capacity. Lack of safe seafaring among users and operators of water transport has, in particular, resulted in frequent loss of life at sea, as well as material losses.

9. A direct correlation exists between lack of access to affordable and reliable water transport and the level of poverty in isolated and water transport-dependent communities throughout PNG. Access to transport services and ease in transferring from one mode of transport to another has a significant impact on production and income levels, social and economic indicators, and the overall quality and desirability of rural life. Inaccessible, unaffordable, and unreliable water transport in remote coastal and river areas has led to a marginalization of the rural communities. They are unable to reap benefits from development as they are left without the necessary access to essential services (e.g., immunization, aid-posts, and primary schooling) and markets. Uneconomical movement of village products serves to undermine local production, self-initiative, livelihood, and survival.

## **B. Analysis of Key Problems and Opportunities**

### **1. Maritime Sector Governance**

10. The Government is committed to a far-reaching sector reform program. These reforms will establish maritime safety services according to international standards by installing an appropriate management structure that will enable effective client consultations, strategic planning and service provision, and adequate and sustainable funding of maritime safety. Under the reform program, the Government has introduced higher user charges and their sole use for the purposes of maritime safety. It is preparing to establish an NMSA that has its own funding and staff to replace an ineffective MTD. The establishment of the NMSA is expected to significantly improve delivery of maritime services under the prospect of adequately funded operation and maintenance, skilled and motivated staff, and improved productivity and service orientation.

### **2. Community Water Transport**

11. The maritime and river-based communities suffer from extremely constrained transport conditions, where living standards are nearing absolute poverty. In many cases, these communities lack sufficient soap, salt, and staple foods, and do not have adequate access to educational or health services. Very poor health indicators characterize these communities, with maternal health the lowest in the region and tuberculosis incidence rising. These communities only occasionally trade in the cash economy, and only in small quantities, due to unaffordable transport prices. The Government, the private sector, and civil society as a whole have recognized the need to improve maritime and river-route transport to these communities.

12. The Project offers an opportunity to directly and indirectly impact the quality of life, particularly for women and children, in the marginalized coastal and river communities. Improved water transport will increase (i) access to markets, leading to higher household incomes needed to meet basic family welfare needs; (ii) capacity to produce and purchase nutritional food supplies, leading to reduced nutritional deficiencies, particularly among children; (iii) efficiency of boat services, leading to reduced workload burdens for women, reduced time in transit, increased personal safety, and greater mobility; (iv) access to educational services, resulting in reduced geographical and gender disparity in enrollment, performance, and completion rates; and (v) access to preventive and curative medical services, resulting in reduced maternal mortality ratios, improved family planning, increased childhood immunization rates, and reduced preventable disease. Poverty incidence in, and socioeconomic profiles of, the affected communities are in Supplementary Appendix A with a summary poverty reduction and social strategy and summary initial poverty and social assessment in Appendix 3.

### **3. Sector Restructuring: An Opportunity to Support Poverty Reduction**

13. With the support of the Project, a comprehensive transport system can be set up provided that (i) an accountable institution (NMSA) governs the sector, and (ii) a financing mechanism (CWTF) is established to provide the initial subsidies required to facilitate transport to remote communities. The Project supports implementation of a tightly connected strategic restructuring program that steers the institutional reforms and leads to a reduction in the cost structure of shipping services. The institutional reforms will make it possible for the Government to reach the most marginalized communities in PNG with water transport. The sector restructuring plan in Appendix 4 provides an overall framework and a time frame for sector reorganization.

### **4. Asian Development Bank Strategy and the Project**

14. While no other external assistance is available to the sector, with the exception of cofinancing by the Australian Agency for International Development for the maritime sector restructuring project (footnote 2), complementarity exists between external agency-supported rural development programs and the Project. Complementary external assistance projects are listed in Appendix 5. These programs, in addition to the Government's initiative to implement a food security policy, include agricultural and health extension services, and HIV/AIDS awareness and prevention programs. The synergies between these programs and the Project will be systematically harnessed by the Project to maximize the related benefits to the communities involved in the new transport services.

15. The Project is designed in accordance with ADB's overarching objective to reduce poverty in the Asian and Pacific region by 50% by 2015. ADB's PNG country assistance strategy centers on service delivery improvement, particularly in rural areas and through public sector reform processes. The Project addresses ADB's poverty reduction objective in PNG by improving access of remote communities to markets and services, and thus induces increased cash incomes as a result of reduced expenditure on transport and increased earnings as a result of increased marketing of local products. The Project permits enhanced standards of living through an increase in spending of the additional disposable income on improved diet, preventive health care, and uninterrupted primary education. In line with ADB's strategy, the Project also supports the Government's public sector reform program by providing a structured framework for improving management of the maritime sector through establishment of an autonomous and self-funding NMSA.

### **5. Lessons Learned**

16. The current portfolio of PNG projects consists of 12 loans, 3 of which have been rated "at risk". The Government and ADB are working to improve this implementation record. Delays in starting projects have hindered successful implementation of many projects. Time has been needed for the establishment of project management arrangements, issuance of legal opinions, and ensuring an understanding of the negative pledge clause. Inadequate counterpart funds have also been a recurrent problem in project implementation in PNG and have led to weak disbursement performance.

17. The Project brings together the concept of a minimum subsidy tender for a water transport franchise and a special purpose trust fund. This combination is necessary to enable delivery of services in the remote rural sector of PNG in light of a highly constrained fiscal situation. Subsidized transport services with the objective of involving rural populations in

mainstream economic and social activities are common throughout the world. The economic benefits to civil society of minimum subsidy transport schemes exceed their financial costs to the governments. Minimum subsidy shipping franchise schemes have been implemented with ADB assistance in other Pacific developing member countries (PDMCs), including the Fiji Islands and Marshall Islands.<sup>6</sup> This experience has demonstrated that the proposed arrangement (i) is able to deliver transport services at a lower cost than a government-owned and operated service, and (ii) can induce a semi-commercial and potentially commercial service where none would otherwise exist.

18. ADB's experience with trust funds has been positive and includes several special purpose funds. Examples include the Falekaupule Trust Fund in Tuvalu<sup>7</sup> to fund island development projects, and the Bhutan Health Trust Fund<sup>8</sup> for funding primary health care, supply of drugs, and immunization programs. Trust funds have been successfully used as a funding mechanism by many other government and international agencies, e.g., local environmental trusts and the Global Environment Facility (GEF). Other types of dedicated funds in the transport sector are road funds that operate in many developed and developing countries. Albeit contrary to conventional treasury policy, dedicated special purpose funds have preserved essential services that could have otherwise been starved of funding, and, because of their crucial role in poverty alleviation have consequently become increasingly accepted.

### III. THE PROPOSED PROJECT

#### A. Objectives

19. The objectives of the proposed Project are (i) to directly reduce poverty in the marginalized maritime and river-based communities by inducing water transport to remote areas, and by providing safer transport services and infrastructure; and (ii) to support implementation of the maritime sector reorganization and reform program, particularly through the establishment of NMSA.

20. Specifically, the proposed Project will (i) provide community water transport services, (ii) restore maritime and river transport infrastructure, (iii) improve community transport safety, (iv) optimize access of disadvantaged communities to development opportunities, (v) enable the planned NMSA to fulfill its mandate to improve maritime safety, (vi) increase efficiency in maritime transport, and (vii) promote community engagement.

#### B. Components and Outputs

21. The Project has six components

**Component 1.** Establishment of a Community Water Transport Trust Fund (CWTF).

**Component 2.** Restoration of small maritime and river transport infrastructure to enhance vessel efficiency and safety.

<sup>6</sup> ADB. 1995. *Technical Assistance to Fiji for Transport Sector Institutional Strengthening*. Manila; ADB. 1997. *Technical Assistance for RMI for Institutional Strengthening in the Transport Sector*. Manila.

<sup>7</sup> ADB. 1999. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Tuvalu for the Island Development Program*. Manila.

<sup>8</sup> ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Bhutan for the Health Care Reform Program*. Manila.

**Component 3.** Improvement of small-craft safety to reduce accidents and loss of life and goods.

**Component 4.** Capacity and skills development of communities for harnessing rural development opportunities and capturing the related benefits.

**Component 5.** Implementation of the maritime sector restructuring program and the NMSA.

**Component 6.** Project management services.

## 1. Component 1

22. **Community Water Transport Trust Fund.** The CWTF will be established as a trust under a deed of trust with three trustees<sup>9</sup> and a secretariat. The CWTF will be a terminating fund that provides an impetus for delivery of transport services to the poor and disadvantaged remote communities. The trust will be established as a low-cost, transparent, and demand-driven mechanism to provide additional resources for the Government to fulfill its social obligation to support water transport to the maritime and river-based communities.

23. There are four main reasons for setting up a dedicated CWTF: (i) additional resources are needed beyond the available fiscal resources to provide water transport for PNG's remote communities, (ii) sustainable and reliable financing of the community water transport subsidy is required to implement the private sector services, (iii) transparency and accountability are required in management of the subsidy, and (iv) investments in international capital markets will provide a natural hedge against the foreign currency exchange risk.

24. The deed of the CWTF identifies the mechanisms under which the fund will be managed. Details of the CWTF are in Appendix 6 and the deed of trust of the CWTF are summarized in Supplementary Appendix B. Investment income of the CWTF will be tax exempt by the Government of PNG. The Government will not make amendments to the CWTF deed, to the status of the CWTF, or to the legislation making financial provision of the dividend revenues to financing the community water transport subsidy, without prior consent of ADB.

25. The investment income of the CWTF will finance the subsidy payments of the water transport services. The magnitude of the revenues dictates the amount of subsidies that the Government can commit to pay per annum, and thus the size of the water transport franchise scheme. This provides an effective ceiling to the extent to which the Government will participate in supporting water transport services to remote communities. The investment income has been calculated, in light of the current investment climate, at 3% per annum. The CWTF will be established 18 months prior to the award of the first water transport franchise contracts enabling accumulation of adequate reserves of investment income providing financial contract cover for the Government. The actual subsidy requirement will become known once the tenders for the water transport services have been concluded and the minimum-subsidy bids have been identified.

26. **Route Franchise Schemes.** The identified route franchise schemes will be tendered under a staged program commencing with remote community water transport routes in the

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<sup>9</sup> Trustees include (1) Secretary of the Department of Treasury, (2) Secretary of National Planning and Rural Development, and (3) Secretary of the Department of Transport.

South Fly District of Western Province, Coast of Oro Province, Coast of Morobe in Madang Provinces, Ramu River in Madang Province, Sepik River in Sandaun Province, South Coast of West and East New Britain Provinces, and Southeast Coast of New Ireland Province. These routes have been identified as priority routes based on the expected poverty reduction impact, potential for inducing local economic activity, and likelihood of reducing or eliminating the subsidy over a period of time. Further areas will be identified and routes detailed under the subsequent phases of the Project. The detailed preparation of the water transport franchise schemes and the corresponding tender documents for the route franchise tenders will be accomplished during the detailed design phase of the Project. This will identify the minimum service level including frequency, capacity, and safety standards, and the maximum cargo and passenger tariffs affordable to the client communities. The tender documents will specify a ceiling tariff that corresponds to an affordable tariff for passenger transport for each specific scheme.<sup>10</sup> A ceiling tariff for cargo transport will correspond to less than or equal to the current regulated rates provided under the Papua New Guinea Coastal Freight Rates.<sup>11</sup>

27. It is expected that about 90% of the first phase franchise routes will reach break-even by their fourth tender, leaving 10% (or \$33,000 per annum [pa]) of the subsidy as a permanent financing requirement for the Government. The second phase franchise scheme expands the water transport program outwards and to more remote routes. About 70% of these are estimated to reach break-even status by their fourth tender, leaving 30% (or \$99,000 pa) of the subsidy as a permanent financing requirement for the Government. Similarly, the third phase scheme is estimated to leave about 50% (or \$156,000 pa) of its subsidy requirement for the Government to finance. These permanent subsidy requirements resulting from the structural characteristics of the routes for long-distance and low-volume traffic are estimated to amount to \$297,000 pa by the end of the Project. These costs will be reviewed by the technical reviews of the Project. The Government will finance these subsidies on a recurring basis from its fiscal resources and thus implement its policy to deliver essential services in the remote areas. Details of the franchise scheme are in Supplementary Appendix B.

## **2. Component 2: Remote Water Transport Infrastructure Restoration**

28. The Project will restore 40 selected maritime transport infrastructure elements, including piers, pontoons, jetties, landing ramps, and small wharves, to develop robust facilities that reduce the need for the unsafe cargo lightering off the side of the vessel. The facilities to be restored are listed in Supplementary Appendix C. These support the first phase water transport franchise services by making vessel operations more economical and safe. Least-cost technical solutions have been selected. The engineering and supervision component under the Project will be tasked to ensure that appropriate environmental mitigation and maintenance plans and schedules developed.

29. Maintenance of the restored small water transport infrastructure has been estimated to cost K200,000 (\$60,000) annually. This will be funded by the planned NMSA and will be absorbed in its cost structure. Maintenance of the structures will be carried out by suitably qualified local contractors. These contractors, engaged under local competitive bidding, will be encouraged to organize and employ local village labor for the routine maintenance tasks, while carrying out specific repairs and maintenance with its own resources. Both maintenance and

<sup>10</sup> Estimated to correspond to the tariff (K0.15 per passenger-kilometer [km]) required for a workboat operating at a break-even rate versus the current (and unaffordable) tariff of the banana-boat (open hull 19-23 foot boats with no seating or safety facilities, rated for 6-8 persons with a speed of 20 knots) charter rate (K0.4 per passenger-km) faced by the remote river and water-based communities.

<sup>11</sup> Section 240 of the Merchant Shipping Act (Chapter 22), 1995.

construction contractors will actively participate in the HIV/AIDS awareness campaigns developed under Component 4.

### **3. Component 3: Small-Craft Safety**

30. The Project targets development of a safety orientation among small-craft operators and users. The component on small-craft safety will (i) introduce formal marine accident reporting and investigation by the planned NMSA; (ii) prepare pro-forma small-craft safety guidelines with a focus on establishing minimum safety standards; (iii) develop a boat registration system for currently unregulated motorized boats (below 10-meters in length); (iv) develop a system for licensing boat operators; (v) determine and mandate essential safety equipment for new and existing boats; (vi) establish a country-wide marine radio network to ensure minimum communications standards for all coastal areas and river communities,<sup>12</sup> including the extension of radio coverage by fitting the existing radio towers with the necessary repeaters and automatic message forwarding to the main stations; (vii) develop a public information dissemination campaign on small-craft safety using, among other things, wooden boards, notices, media, and training with nationally prominent and respected members of society delivering the necessary messages; (viii) revise, republish, and disseminate the “Basic Boating Safety in Papua New Guinea Waters” in English, Motu,<sup>13</sup> and Pidgin, and develop curricula for introduction of a maritime safety subject in elementary schools; (ix) design and support awareness seminars on maintenance, operation, and safety of small craft, and training of appropriate local government and community officials to carry out inspections of boats at traditional landing sites; and (x) carry out community-wide safety training on small-craft safety precaution, vessel inspection checklists, procedures for distress at sea, and other safety measures.

31. The Project will also support development of the skills and coordination mechanisms to enhance existing search and rescue operations and assets. In particular the Project will assist the planned NMSA to develop a formal search and rescue action plan through the conduct of consultation seminars and workshops covering relevant public and private sector stakeholders.

### **4. Component 4: Community Development to Optimize Use of Transport**

32. To maximize the use of the water transport provided under the Project, community extension services are provided to develop capacity of the remote communities to benefit from the rural development opportunities. The component will (i) identify and generate local-level awareness of new social and economic development opportunities available to very poor communities in light of improved transport services or reduced transport costs; (ii) build capacity for community-level participation in cross-sector planning activities; (iii) identify mechanisms to encourage communities to take up new economic opportunities; (iv) support communities' efforts to maximize local production opportunities; (v) support improved access to, and awareness of, preventive health care, including HIV/AIDS prevention and awareness programs; and (vi) identify and support communities in development and implementation of micro-scale projects that directly reduce poverty and that are directly linked to the new transport services. Women's participation will be actively encouraged under the community development programs.

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<sup>12</sup> In accordance with the recommendation of the Papua New Guinea National Master Plan for the Maritime Radio Communications Sector.

<sup>13</sup> Motu is an indigenous language widely spoken, particularly in the coastal areas, alongside English and Pidgin.

## 5. Component 5: Establishment of the National Maritime Safety Authority

33. The Government is implementing a maritime sector restructuring plan and has already accomplished critical steps. These included separation of sector cost recovery revenues (e.g., navigation lights dues) from the Government's consolidated revenues for the use of the sector to an interim trust account until the autonomous NMSA takes control of this revenue collection. It has also sold its navigation aids vessel that required significant budgetary resources, but did not provide services to the sector, and it has increased navigation aids tariffs. The next steps under the program depend heavily on the timely establishment of the NMSA. The NMSA Act was passed in Parliament on 24 September 2003 and the authority is expected to be fully functioning in 2004.

34. The NMSA needs to be equipped with facilities, instruments, and systems that will allow it to operate effectively and to be free of land claims arrears. It also needs to have staff capable of carrying out its functions effectively under rigorous performance monitoring. The Project will finance (i) establishment costs of NMSA, including offices, communications facilities, and management information systems; (ii) staff retrenchment<sup>14</sup>, recruitment, and training; and (iii) clearance of accumulated land claims.

## 6. Component 6: Project Management

35. The Water Transport Franchise Unit will be the project management unit (PMU) under the auspices of NMSA, once this is established. The PMU will manage the water transport route franchise contracts, small-craft safety activities, and small water transport infrastructure maintenance. Upon completion of the project, these activities will continue as routine functions of NMSA. The Executing Agency (EA) has nominated the PMU and its project manager for Loan 1754-PNG: Rehabilitation of the Maritime Navigation Aids (footnote 3) as the interim project management to carry out the upfront activities of the proposed Project until the Project is approved by ADB.

### C. Special Features

36. The Project establishes an investment fund of \$11 million equivalent – comprising \$10 million from the loan proceeds and \$1 million equivalent from the counterpart funds – that is expected to yield an annual investment income of \$330,000. The trustees will (i) select, in accordance with ADB's *Guidelines on the Use of Consultants*, one or more reputable fund managers to invest the principal capital from the loan proceeds in international markets and the principal capital from the counterpart contribution in the domestic market; or (ii) decide to invest the funds from the loan proceeds directly in international investment funds and the counterpart contribution directly in the domestic investment funds. A conservative investment strategy will be applied similar to investments of pension funds. The PMU will request the trustees for repatriation of specific sums of the investment income on a quarterly basis to a dedicated Kina account with the Bank of Papua New Guinea, as the subsidy payments to the transport providers under the water transport franchise schemes fall due. These subsidy payments will be made by the trustees from this CWTF account on a quarterly basis, triggered by payment instructions of the PMU. Establishment of the dedicated account for depositing the repatriated CWTF investment income with the Bank of Papua New Guinea is a condition for withdrawal of the loan proceeds for this component.

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<sup>14</sup> This refers to retrenchment of redundant staff in the Department of Transport.

37. The CWTF will be a terminating fund. Its principal capital will be gradually reduced through withdrawals to finance the small water transport infrastructure associated with the subsequent phases of water transport services. These withdrawals will reduce the principal investment of the CWTF by estimated amounts of \$3.0 million in the 5<sup>th</sup> year of the CWTF for the infrastructure required by the second phase franchise scheme; and by \$2 million in the 8<sup>th</sup> year of the CWTF for the infrastructure required by the third phase franchise scheme. At its lower level, the investment income will be supplemented by the use of the principal of the CWTF for the payment of the community water transport subsidy. The future life, magnitude, and sources of potential replenishment of CWTF will be reviewed 5 years after it has been established, corresponding to the implementation of the second phase of the water transport route franchise and the first withdrawal from the principal investment.

#### D. Cost Estimates

38. The total cost of the proposed Project, including taxes, duties, and interest during construction (IDC), is estimated at \$28.14 million, of which the foreign exchange cost, including IDC, is about \$18.53 million (66%) and the local currency cost (including taxes and duties) is about \$9.61 million (33%). The estimated costs of the various project components are summarized in Table 1. Detailed cost estimates are in Appendix 7.

**Table 1. Cost Estimates and Financing Plan**  
(\$ million)

Description	Cost Estimates			Financing Plan			
	Foreign	Local	Total	Gov't	OPEC	ADB	Total
<b>A. Base Costs</b>							
Community Water							
1 Transport Fund	10.00	1.00	11.00	1.00	0.00	10.00	11.00
2 MSA Capitalization Costs	0.73	2.79	3.52	2.15	0.00	1.37	3.52
3 Infrastructure	1.22	2.85	4.07	0.66	3.10	0.31	4.07
4 Safety Improvement	1.19	0.60	1.79	0.60	0.00	1.19	1.79
5 Community Development	0.92	0.35	1.27	0.34	0.00	0.92	1.26
6 Project Management	3.15	0.93	4.08	0.10	0.00	3.98	4.08
<b>Subtotal A</b>	17.21	8.52	25.73	4.85	3.10	17.77	25.72
<b>B. Contingencies<sup>1</sup></b>	0.99	1.09	2.08	0.18	0.89	0.99	2.08
<b>C. Interest During Construction</b>	0.33	0.00	0.34	0.10	0.00	0.24	0.34
<b>Subtotal B</b>	1.32	1.09	2.42	0.28	0.90	1.24	2.42
<b>Total</b>	18.53	9.61	28.14	5.13	4.00	19.01	28.14

<sup>1</sup> 7 percent for civil works and 10 percent for consultant services

ADB = Asian Development Bank; NMSA = National Maritime Safety Authority; OPEC = OPEC Fund for International Development.

Source: Asian Development Bank estimates.

#### E. Financing Plan

39. It is proposed that ADB provide a loan in an amount equivalent to SDR12.83 million from ADB's Special Funds resources representing about 67% of the total cost of the Project. The

Government also requested, and obtained, cofinancing from the OPEC Fund in the amount of \$4.0 million.<sup>15</sup>

**Table 2. Financing Plan**  
(\$ million)

Source	Foreign Exchange	Local Currency	Total	Percent
Government	0.1	5.0	5.1	18.2
ADB	17.0	2.0	19.0	67.5
OPEC Fund	1.5	2.5	4.0	14.2
<b>Total</b>	<b>18.6</b>	<b>9.5</b>	<b>28.1</b>	<b>100.0</b>

ADB = Asian Development Bank; OPEC Fund = OPEC Fund for International Development.  
Source: Asian Development Bank estimates.

40. Papua New Guinea will be the Borrower. The loan will have a 32-year term, including a grace period of 8 years, with an interest charge of 1% during the grace period and 1.5% during the amortization period. The Government has confirmed availability of counterpart funding from its own resources in a total amount of about \$5.1 million – in the amounts of \$1.0 million in 2004 and \$0.6 million each subsequent year for the purposes of the Project.

## F. Implementation Arrangements

### 1. Project Management

41. DOT will be the EA for the technical activities of the proposed Project until such time when the PMU will be transferred to the fully functioning NMSA, which will then become the new EA. The Secretary of DOT will be the Project Director with the Deputy Secretary for Technical Services operating as the direct supervisor of project activities. The PMU will (i) program, administer, and coordinate daily project activities, manage contracts including those for consultants and contractors, convene the steering committee, and liaise with other government and outside agencies; (ii) develop and manage the community water transport shipping franchise routes; and (iii) support establishment and operation of the CWTF and issue payment instructions for the water transport franchise subsidy from the investment income of the CWTF. The PMU will be headed by a project manager and supported by a financial administrative officer, community liaison officer(s), and an engineer, all of whom would be competitively selected, and subject to ADB's approval.

### 2. Steering Committee

42. A steering committee for the Project will comprise industry and community representatives as well as representatives of the Department of National Planning and Rural Development, the Department of Treasury, the Department of Finance, Department of Transport, Department of Provincial and Local Level Governments, Department of Health, Department of Education, Department of Agriculture and Livestock, and external agencies supporting rural development. The steering committee will actively monitor, guide, and facilitate the Project's timely implementation and access to officials and data. The Project Manager will coordinate convening of the steering committee on a quarterly basis. The steering committee will comment on the PMU's quarterly reports on the Project.

<sup>15</sup> The terms of the OPEC Fund loan would be 20-year maturity with a 5-year grace period, 2.5% annual interest, and 1% service charge.

### **3. Implementation Period**

43. The project implementation period starts in May 2004 and ending in December 2011. The Project implementation schedule is shown in Appendix 8. In 2004, the implementation activities include placement of the CWTF in the capital markets, detailed specification of the community water transport routes, community development survey work, detailed design and procurement of the civil works, development of the small-craft safety programs, and the service franchise tenders. Service franchise tenders will be awarded in 2006. Similar activities will be completed in 2007 for the second phase routes. ADB and the Government will jointly carry out a fundamental technical review of the Project in 2007. Second phase routes will be operational from 2007 to 2011.

### **4. Procurement**

44. Procurement under the Project, including that funded by the OPEC Fund, will be carried out in accordance with ADB's *Guidelines for Procurement*. All contracts for civil works exceeding \$1 million will be awarded following international competitive bidding (ICB) procedures. Civil work contracts below \$1 million can be awarded following local competitive bidding procedures. Contracts for equipment below \$500,000 will follow the international shopping procedure. Prequalification of contractors for ICB will be carried out in accordance with ADB's *Guidelines for Procurement*. ADB approval prior to the award of contract will be required for all contracts. ADB will not be committed to financing contracts awarded without prior ADB approval. Tentative contract packages are in Appendix 9.

### **5. Consulting Services**

45. International and domestic consulting services will be required for (i) project administration, (ii) community development, (iii) small-craft safety, and (iv) civil engineering and supervision. The Government's request for advance recruitment action for the selection of these services has been approved. These consulting services will be financed under the loan funds of the Project. DOT will select appropriately qualified counterparts for each consultant for Project implementation. DOT will select and engage the consultants as a firm in accordance with ADB's *Guidelines on the Use of Consultants*, using the quality and cost-based selection (QCBS) method, except for the domestic project administration consultants who will be selected and engaged as individuals on a competitive basis in accordance with arrangements acceptable to ADB. Outline terms of reference of the consulting services are in Supplementary Appendix D.

#### **a. Project Administration**

46. Project administration will be supported by consulting expertise in the fields of project management, administration, procurement, contract management, shipping and franchising, engineering supervision of marine structures, maritime safety, search and rescue operations, financial market operations, and training. Project administration is estimated to require a total of about 312 domestic and 113 international consultant person-months. Special provisions in the loan have been earmarked for yearly financial auditing of the Project accounts.

#### **b. Community Development**

47. Community development will require international and domestic consulting expertise in the fields of (i) community development and entrepreneurial training, (ii) community health and distance education, (iii) rural income generation, and (iv) community awareness and

communication strategies. These consultants will launch innovative community schemes in the marginalized and vulnerable communities targeted by the proposed Project, covering activities in micro-business, health, and capacity building. Community development is estimated to require a total of about 108 domestic and 40 international consultant person-months.

#### **c. Small-Craft Safety**

48. The small-craft safety component will require international and domestic consulting expertise in the fields of public administration of small craft, small-craft safety equipment and policing, radio networks, public information dissemination, and development of school curricula on sea safety. This component is estimated to require a total of about 100 domestic and 50 international consultant person-months.

#### **d. Civil Engineering**

49. The preconstruction activities for the small water transport infrastructure restoration component require consulting expertise in the fields of contract management, marine civil engineering, and supervision. These consultants will support the preparation of detailed specifications for the civil works contracts, contract documents, baseline benefit monitoring indicators, and tender processes. Civil engineering is estimated to require a total of about 40 domestic and 20 international consultant person-months.

### **6. Disbursement Arrangements**

50. Under the proposed implementation arrangements, the Government will allocate annual counterpart funds for expenditures for 7 consecutive years. The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook*, dated January 2001. All applications for withdrawal for the disbursement of the loan funds for eligible expenditures will be carried out (i) by direct payment, (ii) by reimbursement procedures, and (iii) through an imprest account. The initial amount of the imprest account will be \$200,000 with a maximum payment of \$50,000 for any single item. The statement of expenditure procedure will be available for the proposed Project. Loan funds will also be disbursed for the CWTF subject to fulfillment of the conditions in para. 75.

### **7. Accounting, Auditing, and Reporting**

51. The PMU will provide ADB and the Government with inception, quarterly progress, midterm, and annual reports concerning the Project's plans, progress, outputs, and impact, including those related to sector policy reforms, CWTF management, franchise schemes, civil works, and consulting services. These reports will provide concise and clear information on financial aspects, implementation progress and constraints, and recommendations for resolving problems. To facilitate postevaluation of the Project, the PMU will provide ADB and the Government, within 3 months of physical completion of the Project, with a completion report that will cover comprehensively details of project implementation, benefits and costs, and any other information that may be requested by ADB concerning the Project.

52. The Government, with the support of the PMU, will establish and maintain separate accounts for all expenditures under the proposed Project, including its individual components. It will furnish ADB with financial statements reflecting the accounts for each project-related contract. These financial statements will be audited using appropriate auditing standards by auditors acceptable to ADB. The audited financial statements, together with the auditor's report,

will be forwarded to ADB within 9 months of the end of each related fiscal year. Auditing charges are eligible for funding from the loan proceeds.

## **8. Project Performance Monitoring and Evaluation**

53. The PMU will compile and analyze data to facilitate project performance monitoring and evaluation. It will forward this information to ADB and the Government in accordance with the schedule of performance measurement indicators agreed in the project framework. This exercise aims to assess the macroeconomic impact and sector development goals of the Project. It includes three major activities: (i) benchmarking, to provide DOT management with objective reference points for impact evaluation that correspond with the needs of the stakeholders and consumers; (ii) benefit monitoring, to ensure that the project benefits actually accrue to the target beneficiaries and that the poverty rate and indicators are reduced for remote coastal and inland communities; and (iii) post-project performance evaluation, to assess the overall effectiveness of the Project.

## **9. Technical Review**

54. In addition to twice yearly review meetings to monitor the progress of the Project, a technical review of the Project will be carried out jointly by the Government and ADB in years 2006, 2008, and 2010, corresponding to the planned withdrawals from the CWTF. The focus of the technical review will be to (i) determine the functionality of the CWTF and its capital adequacy, and sources of replenishment, if warranted; (ii) determine if any deviations from the project design or implementation are required; (iii) respond to assumptions and risks that might constrain the satisfactory implementation of the Project and achievement of development objectives; and (iv) review the amount required for subsidizing the structurally nonviable routes on an ongoing basis.

# **IV. PROJECT BENEFITS, IMPACTS, AND RISKS**

## **A. Economic Aspects**

### **1. Economic Analysis**

55. The detailed economic and financial analyses of the proposed Project with the respective sensitivity analyses are in Appendix 10 with details in Supplementary Appendix E.

56. The economic benefits resulting from the Project are estimated by comparing the situations with and without the Project. The economic costs of the community transport component include vessel acquisition and operational costs. These also include the funds placed in the CWTF to finance the subsidy for the transport services. The costs of the small water transport infrastructure component include the incremental costs associated with the implementation of the infrastructure restoration, such as detailed engineering, civil works, operation, and maintenance. For community water transport, the benefits stem from enhanced mobility, increased affordability of inward transport of village supplies, and increased community income levels as a result of enhanced export of village products. The small water transport infrastructure restoration will lead to improved cargo handling efficiency, enhanced safety of lightering, and reduced cargo damage. The Project will also yield the following additional, nonquantified benefits:

- (i) Improvements in maritime safety will evolve from the education and public awareness campaign, the introduction of small-craft regulations, and improvements in small-craft equipment, marine communications, and search and rescue capability. This will, in turn, lead to reduction in loss of life and goods during transit; and
- (ii) Improvements in social services will result from better access to services at the local level and increased mobility of villagers to district and provincial centers.

57. **Community Water Transport.** Over the last 20 years, the availability, frequency, and quality of vessel services to rural coastal and river communities have declined as commercial vessel operators have withdrawn services and the Government has disposed of its trawler fleet of 51 vessels that served many rural areas of the country. Much travel and carriage of goods at the village level now involve the use of small craft (banana boats) that are inefficient and unsafe. The rising cost of gasoline in kina terms, largely due to the devaluation of the currency against the US dollar, has exacerbated the effects of high fuel consumption. More economical alternatives, particularly boats with diesel-fueled engines, have improved vessel economics and offer more affordable transport to the remote and disadvantaged communities. The economic evaluation of the community transport component of the Project involved examination of seven routes in PNG judged to be significantly deficient in community water transport. The benefits of water transport were considered using resource cost savings from the existing vessel operations and the consumer surplus from the induced traffic. The sum of these forms the gross benefits of this component of the Project. The benefits were estimated from the willingness of users to pay for vessel services on the basis of market observations.

58. The economic internal rate of return (EIRR) equalizes the present values of economic costs and benefits that accrue to the national economy. An economic net present value of the Project reflects a return in excess of the discount rate of 12%. Economic values for costs and benefits are obtained by extracting taxes and duties, and by applying a conversion factor to external prices to reflect their value in local terms. External components are adjusted to their local values using a shadow exchange rate of 1.1. The EIRRs of the seven cases ranged from 13% to 38% with the economic net present values ranging from K0.2 million to K5 million.

59. **Community Water Transport Subsidy.** The financial evaluations of the seven vessel services indicate that most of the community vessel services required in PNG are unlikely to be financially viable at the outset without a subsidy. The financial internal rate of return (FIRR) calculations of the financial analysis do not address all the conditions that a private sector operator faces in the development of private vessel services in PNG, including the cost of capital for asset procurement. To examine the impact of these conditions, the evaluation model for the case was expanded into a financial model that contains an income statement, cash-flow statement, balance sheet, a table of financial ratios (including the FIRR on total and equity capital in real and nominal terms), and cost input tables, including one that includes the cost of financing, taxation, and typical private sector returns on equity capital.

60. The subsidy for the Rai Coast case was calculated as the amount of additional revenue that is necessary to provide a 15% real, after-tax FIRR on equity capital. Only under these conditions will the community transport franchise scheme be able to apply the private-public partnership model proposed under the Project. The subsidy was structured over three time periods with annual subsidies within each period: an initial 3 years, a second 3 years at a subsidy level of two thirds that of the first period, and a final 4 years at a subsidy level of one third that of the first period. Beyond the 10<sup>th</sup> year, the subsidy is zero. The base case subsidy for

the Rai Coast case is estimated at K0.17 million for each year of the first 3-year period. The sensitivity evaluations show that the subsidy is most sensitive to variations in the tariff level, operating costs, and the FIRR on equity that the private investor requires. All seven evaluations were conducted in nominal terms (i.e., they included inflation applied to capital items, operating costs, and revenue), and the requirement for subsidies was calculated as the required return on capital minus net income (revenue minus expenses). The resulting average subsidy for these seven vessel services is estimated in 2001 kina at K280,000 a year per service for the first 3-year period, K100,000 a year for the second 3-year period, and K50,000 a year for the final 4-year period.

**61. Small Water Transport Infrastructure Restoration.** The evaluation of the infrastructure restoration component involves tradeoffs between cargo handling efficiency with and without the Project, the cost of lightering, cargo damage with lightering, and the costs of the Project. In the case of cargo damage due to lightering, a unit cargo value of K3,000 per ton was estimated from surveys of inbound village goods, which are the dominant category of products, and K500 per ton for outbound produce. It was assumed that the damage factor for lightered cargo is 2% of its value.

**62.** All 63 infrastructure subprojects considered in this study were screened for economic feasibility. The screening process drew on a general evaluation of lightering versus fixed infrastructure investment. A total of 40 sites passed the screening process at a financial cost of about K16 million. The overall infrastructure restoration component generates an EIRR of about 17% and a net present value of about K4.4 million. As the sensitivity analyses show, the overall infrastructure restoration component is much less sensitive to changes in external parameters than the individual sites.

## **B. Social Considerations**

**63.** The Project will target communities and waterway networks where the residents are economically and socially marginalized due to deficient marine transport services. Communities dependent on water transport in the selected areas are characterized as the poorest in the country with more than half of the population living in poverty on less than \$1 a day. They have access to very limited transport and declining (in many cases, nonexistent) social services. Commerce in these areas is severely curtailed by uneconomical movement of village products, declining production and income levels, and increased cost of basic goods. Health conditions are also negatively affected due to restricted access to public health services, medication, and immunization; most families in these areas suffer from poor nutrition, for many consisting of a two-product daily diet, constrained access to clean water, and limited access to education. The households in the affected areas are growing increasingly marginalized, isolated from knowledge and service networks, and with rapidly diminishing social capital.

**64.** The Project will employ a systematic approach to poverty reduction, using four complementary strategies: (i) establishment of water transport services, (ii) development of supporting infrastructure, (iii) promotion of maritime safety, and (iv) development of community capacity. These strategies involve a range of national, provincial, district, and community-based activities. To optimize benefits of water transport services, small-scale projects will be developed in collaboration with community stakeholders and village councils. These activities will empower local communities to critically assess their own needs and capabilities and to be actively involved in identifying solutions. These programs will be based on local knowledge and designed in collaboration with community stakeholders. The Project will also play a critical role in ensuring access of the disadvantaged and remote communities to complementary poverty

reduction projects in marginalized areas, funded by the Government or by other external assistance programs. These will include enhancement of village agricultural production and new income-generating schemes; building capacity and skills for small business management; increasing awareness of family health and education needs; and enhancing participation in civic affairs.

65. The Project will reduce poverty in disadvantaged areas and provide direct and indirect benefits for marginalized groups, including women and children. Inhabitants of the affected areas are indigenous to these areas and include no other minorities. Thus, indigenous people are not negatively affected as a result of the Project, but constitute the project beneficiaries. The Project will help generate higher household incomes to meet basic family welfare needs; increase personal safety and greater mobility; reduce geographical and gender disparity in enrollment rates at both primary and secondary school; lower rates of preventable disease, morbidity, and mortality; and improve family planning, HIV/AIDS awareness, and childhood immunization rates. Both children and women are major beneficiaries of the Project.

### **C. Environmental Aspects**

66. An initial environmental examination (IEE) was prepared for 21 identified sub-project sites. The IEEs of the 21 subprojects are in a supplementary appendix (Supplementary Appendix F). For evaluation purposes, the summary initial environment examination (SIEE) for the replacement of the provincial wharf in Kandarian, West New Britain with the most extensive potential negative environmental impact is shown in Appendix 11. A detailed environmental impact assessment is unnecessary. For subprojects in component 3 that do not have an IEE and will involve primarily repair, upgrade, and maintenance works costing less than \$250,000, approval by the relevant government agency of the safety and environmental aspects will be sufficient; for subprojects above \$250,000 but less than \$1.0 million, the EA will prepare summary initial environment examination in accordance with ADB's guidelines for ADB to evaluate on a "no-objection" basis. For subprojects exceeding \$1.0 million, the EA will furnish an IEE to ADB for its approval prior to award of contract. The Project supports the establishment of a Protection of the Sea Levy that will enable capability within the NMSA to reduce any potential oil spill impacts in PNG waters. In this regard, the Project will have a potential beneficial impact on the environment.

### **D. Land Acquisition and Resettlement**

67. Under the Project's first phase component for small water transport infrastructure, 40 sites have been selected for restoration works. The sites are small and over water or the intertidal zone with more than 95% of sites currently being used for similar purposes—landing small craft, and for loading and unloading goods and passengers. Where structures are to be moved, they will be repositioned within the existing land agreement made during the original construction of the facility. The Project involves no relocation.

### **E. Project Risks and Safeguards**

68. The primary risks to the Project stem from potential decline in the political will to establish the proposed NMSA, inadequate implementation safeguards for the use of the investment income for the predetermined purpose, and unavailability of counterpart funds.

## **1. Promulgation of National Maritime Safety Authority**

69. The Government's political commitment could weaken, resulting in a delayed establishment of a fully functioning NMSA and implementation of the sector reform program. The complexity of the political processes in PNG may result in unsatisfactory performance on the sector reform agenda, including implementation of the staff retrenchment program.

70. The maritime sector reform process was initiated prior to the current Government's tenure. The maritime sector reform program has not been opposed in the political discussions and has received broad-based support from the political parties, public administration, industry, and civil society. The draft legislation for the establishment of the NMSA was completed with the support of ADB-administered TA. The current Government approved the NMSA proposal and the legislation of the Act was approved on 24 September 2003. Elements of the maritime sector reform program have been confirmed in the loan covenants of Loan 1754-PNG: Rehabilitation of the Maritime Navigation Aids (footnote 3).

## **2. Safeguards on Use of Trust Dividend**

71. The CWTF will be established as a trust under PNG laws with clear management, and investment and distribution policy. Changes to the deed of trust will require unanimous approval of the trustees and the endorsement of ADB. The capital investment fund will be invested in conservative and long-term investment portfolios in domestic and international capital markets, and, thus, the principal amount of the CWTF cannot be drawn down without prior consultation with the trustees, and/or the fund managers. The generated income from international investments will be repatriated only when needed and in the amount needed, and be deposited into a single account with the Bank of Papua New Guinea. Payments to finance the subsidy will be made directly to commercial bank accounts of the transport operators on a quarterly basis by the Bank of Papua New Guinea from the CWTF dedicated Kina account for investment income, based on the payment instructions signed by at least two trustees.

## **3. Availability of Counterpart Funds**

72. As the Government's resources for counterpart funds have recently become increasingly limited, the Project accommodates an increase in the project cost-sharing ratio, with ADB's loan financing all foreign costs (less IDC for the cofinanced loan), and the OPEC Fund cofinancing local costs associated with infrastructure and equipment. The counterpart cost share was thus reduced from 25% to 18%. The Government's strategy is to improve services in rural areas and it has underscored its commitment to allocate the indicated amounts.

# **V. ASSURANCES**

## **A. Specific Assurances**

73. The Government and EA have given the following assurances, in addition to the standard assurances, which are incorporated in the Loan Agreement:

- (i) The Government will maintain dialogue with ADB on the status of relevant transport issues, including maritime safety and rescue operations and plans, oil spill prevention, tariffs for user charges, sector funding, institutional organization, and external assistance.

- (ii) The Government will budget adequate counterpart funding in the minimum amount of \$1.0 million equivalent in 2004 and \$0.6 million annually in the subsequent 7 years for the purposes of project implementation in accordance with the financing plan.
- (iii) Small maritime transport infrastructure restoration proposed to be funded under the Project will meet agreed eligibility criteria as described in Supplementary Appendix D.
- (iv) For the first phase of the small water transport infrastructure restoration component, the Government will cause (a) the EA to screen all proposed sites before the award of civil works contracts to ensure that there are no land acquisition or resettlement effects; (b) the EA will not undertake any site development that requires land acquisition or generates resettlement effects, which include loss of housing, other assets, resources and/or income for both titled and nontitled people.
- (v) For the second, third, and fourth phases of the small water transport infrastructure restoration component, in the event of involuntary resettlement arising out of land acquisition required for the Project, the Government will ensure (a) that such resettlement is carried out in accordance with the relevant government guidelines and ADB's *Policy on Involuntary Resettlement and Handbook on Resettlement* and in case of discrepancies between the Borrower's procedures and ADB's requirements, ADB's requirements shall apply; and (b) that all required land is acquired and compensation and other assistance are provided to people affected as required by ADB's *Policy on Involuntary Resettlement* prior to approval of tender for the respective construction contracts.
- (vi) The Government will ensure that all civil works under the Project are carried out in accordance with *Environmental Assessment Requirements and Environmental Review Procedures* of ADB, and other applicable ADB guidelines, that environmental impact mitigation plans are prepared for all civil works, and that mitigation is carried out by the contractors and monitored by the construction supervisors in accordance with the prepared mitigation plans.
- (vii) Within 12 months of loan effectiveness, the Government will establish a project performance evaluation system and will carry out project performance evaluation in accordance with the performance measurement indicators and implementation schedules agreed between DOT and ADB.
- (viii) The CWTF will be exempt from any tax or duty in PNG and will be authorized to invest funds in the international capital markets without restriction.
- (ix) The Government will obtain the approval of ADB prior to any amendment of the deed of trust establishing the CWTF.

74. The Government and EA have agreed to the following conditions to effectiveness of the Project, which are incorporated in the Loan Agreement:

- (i) Establishment of a legally valid and binding trust fund (CWTF) to finance the subsidy associated with the community water transport services, and civil works and engineering of the small water transport infrastructure restoration associated with the second, third, and fourth phases of the community water transport services through the execution of a deed of trust substantially in the form as described in Supplementary Appendix B; and
- (ii) The Government will make available to the CWTF the counterpart funding in the amount of at least \$1.0 million equivalent.

## **B. Conditions for Disbursement**

75. The Government and EA have agreed to the following conditions for withdrawal of loan proceeds of the CWTF component of the Project, which are incorporated in the Loan Agreement:

- (i) The CWTF shall have entered into an investment management agreement with one or more fund managers, acceptable to the Bank, to manage its funds and/or the CWTF shall have provided the Bank with a letter specifying the investment funds, acceptable to the Bank, it will be investing in and the respective amounts of investment for each investment; and
- (ii) The CWTF shall have opened a bank account in Kina with the Bank of Papua New Guinea and a bank account in convertible foreign currency with a bank acceptable to the Bank.

## **V. RECOMMENDATION**

76. I am satisfied that the proposed loan would comply with the Articles of Agreement of ADB and recommend that the Board approve: (i) the loan in various currencies equivalent to Special Drawing Rights 12,830,000 to Papua New Guinea for the Community Water Transport Project from ADB's Special Funds resources with an interest charge at the rate of 1% per annum during the grace period and 1.5% per annum thereafter; a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan Agreement presented to the Board; and (ii) the administration by ADB of the loan in an amount not exceeding \$4,000,000 to Papua New Guinea for the Community Water Transport Project to be provided by the OPEC Fund for International Development.

Tadao Chino  
President

25 February 2004

## PROJECT FRAMEWORK

Design Summary	Performance Targets	Project Monitoring Mechanisms	Assumptions and Risks
<p><b>Sector Goal</b> Reduction of poverty among the marginalized maritime and river-based communities through enhanced access to markets and social services</p>	<p>Reduce by 50% the share of people whose income is less than one dollar a day. Improve diet through diversification of foods—from the two staple items (fish and sago) in each meal to five (eggs, rice, and meat) for all affected communities.</p> <p>Reduce by 50% the number of people without sustainable access to clean water supply. Reduction in: death from preventable causes by 15%; malaria and gastroenteric diseases by 50%. Immunization rates improved by 25%.</p> <p>Increased AIDS awareness. Reduction in proportion of population exhibiting clinical symptoms of nutritional deficiency by 50%.</p> <p>Improved educational attainment—primary school age children graduating increased by 50%; Increased share of grade 6 continuing to high school by 50%.</p>	<p>Baseline and Benefits Monitoring Evaluation (BME) Surveys: Prices of staple consumption goods in trade stores and volumes traded; prices obtained for village cash production and volumes traded.</p> <p>Baseline and periodic BME monitoring surveys of human development indicators for the affected catchment areas of the Project.</p> <p>National statistics.</p> <p>Data of Department of Education, Department of Health</p>	<p>National income data and detailed human development surveys at village level not currently available</p> <p>Benefits to communities are affected by factors external to the project (e.g., flooding, weather).</p> <p>Delays in project implementation</p> <p>Unavailability and/or lack of funding for development of required complementary services—e.g., national shortages of, and funding for, teachers and health workers; lack of agricultural extension services</p> <p>Resources available to undertake required baseline and BME monitoring</p>
<p><b>Purpose/Objectives</b> Provide affordable water transport services to marginalized communities</p> <p>Induce linkages between remote maritime and river-based communities with rural development programs</p>	<p>Improved access to markets—reduction in cost of passenger travel and freight to target communities by 50%.</p> <p>Improved access to medical services—cost of travel to the nearest aid post reduced by 50%; retention of medical staff in aid posts in communities.</p>	<p>Project benefit monitoring evaluation survey—transport costs for sample of remote communities, including: Project reports Periodic project reports Project review missions Tripartite meetings Multisector steering committee meetings Community meetings and reports Field reports TA project completion reports</p>	<p>Population migration to urban areas, to road access due to experienced remoteness.</p> <p>Organization of community maintenance programs Availability of adequate counterpart funding</p> <p>Extensive community-level support. Access to information. External-agency and government-funded rural and remote development programs.</p>

<b>Design Summary</b>	<b>Performance Targets</b>	<b>Project Monitoring Mechanisms</b>	<b>Assumptions and Risks</b>
<p>Improve vessel efficiency and safety and reverse the current reduction in shipping services to marginally viable routes</p>	<p>Reduce loss of value of goods to zero at unloading/loading at sites of restored infrastructure</p> <p>Reduce unloading/loading time for vessel calls by 75% at sites of restored infrastructure.</p> <p>Reduce cost of shipping operations in the country by 20%</p>	<p>Periodic project reports</p> <p>Project review missions</p> <p>Tripartite meetings</p> <p>Multisector steering committee meetings</p> <p>Vessel operator consultations.</p> <p>Cargo handling statistics of small infrastructure sites.</p>	<p>Availability of counterpart funding.</p> <p>Timely, detailed engineering and effective contract supervision.</p>
<p>Develop a safety mentality among community water transport users and operators.</p> <p>Reduce incidence of small-craft distress, loss of life, and value of goods</p>	<p>Increase use of safety equipped in small craft— 100% for new boats; 50% for existing fleet</p> <p>Enhance regularity of vessel calls with the support of radio communications to 1 day from radio call.</p> <p>Enhance rate of successful rescue operations to 90% of undertaken operations.</p>	<p>Project reports.</p> <p>Inspection reports of provincial disaster committees.</p> <p>Reports of established accident recording system.</p>	<p>Timely delivery of safety kits and VHF equipment.</p> <p>No vandalism or theft of equipment supplied.</p> <p>Land claims expedited and settlements accepted by communities.</p>
<p>Establish an accountable sector agency (NMSA) with tools, staff, funding, and systems to effectively regulate and manage sector operations</p>	<p>Program-based budget.</p> <p>Vessel surveys carried out.</p> <p>Protection of the Seas Levy in place and revenue generated</p> <p>Navigation aids dues generating revenue.</p> <p>Hydrographic office established and operational.</p> <p>A total of 90% of navigation aids operating in place of the current 30%.</p> <p>Vessel travel time improvement by 30%.</p>	<p>Reports and financial statements of National Maritime Safety Authority.</p> <p>Legal documentation on NMSA.</p> <p>Operating documents of NMSA.</p> <p>Reports of vessel operators association.</p>	<p>Timely approval of the NMSA and its expedient implementation</p>
<p><b>Outputs</b></p> <p>Deliver water transport services through minimum subsidy contracts with private sector operators</p>	<p>Establish an interim management capability within the interim project management unit (PMU) and appoint PMU consultants by February 2004.</p> <p>Establish a fully staffed Water Transport Franchise Unit within Maritime by June 2004.</p> <p>Tender seven community water transport route franchise schemes by 2006 comprising one fourth of the schemes under the project</p>	<p>Shipping franchise scheme quarterly monitoring reports.</p> <p>Reports of vessel operators association.</p>	<p>Timely deployment of competent consultants for scheme design.</p> <p>Timely tender process for the first phase and periodically repeated tenders.</p> <p>Effective management of the franchise scheme contracts.</p>

<b>Design Summary</b>	<b>Performance Targets</b>	<b>Project Monitoring Mechanisms</b>	<b>Assumptions and Risks</b>
Provide a sustainable funding mechanism for the shipping subsidy through establishment of a trust with funds invested internationally under prudent management Maximize use of transport through community development program	tender, the balance of the schemes by 2010. Appoint fund managers by March 2004.  Issue a principal investment to the trust fund of \$11 million by April 2004.  Return sufficient dividends to fund the first phase of franchise services after 1 year of fund investment, by April 2005.  Issue a community development contract to qualified consultants/ nongovernment organizations in the amount of \$2.0 million by mid-2004.	Reports of the trust secretariat. Reports of the independent fund monitor. Review meetings. Local consultations. Village council reports.	Timely approval of trust fund with a timely receipt of income subsidy for transport service.  Availability of counterpart funds. Accountable management of the trust fund.  Adequacy of investment income for the subsidy.
Restore 40 small coastal and river landings, jetties, and wharves to support the water transport services	Issue a detailed design and supervision consultant contract for a total of \$0.4 million by December 2004. Complete detailed design for restoration works by December 2005. Issue civil works contracts in a total value of \$3.8 million by mid-2004. Restored transport infrastructure at 40 sites by December 2005.	Project implementation progress reports. Project accounting and management. Contractor quality assurance systems.	Selected consultants and contractors are technically and financially competent. No unusual site conditions revealed at investigation phase requiring reconsideration of individual subprojects. No delays by unforeseen environmental, land or other procedural /regulatory difficulties. No unusual weather conditions delaying construction.
Establish umbrella maintenance contracts and subcontract routine maintenance to local communities  Finance maintenance from NMSA revenues	Maintenance contracts in place by December 2005 fully funded by NMSA.	NMSA and Project Management Unit (PMU) reports	Communities paid on time for work completed. NMSA established with a secure revenue base
Improvement of community water transport safety to reduce loss of life at sea and to develop a safety-oriented mentality.	Promulgation of NMSA legislation by November 2002. Provide nationwide radio communication coverage and search and rescue guidelines by mid-2006 and issue of supply and installation contract in the amount of \$0.7 million by end 2004. Issue guidelines for small-craft safety by mid-2006. Introduce small-craft registration and operator licensing by mid-2006.	Periodic project reports. Project review missions. Tripartite meetings. Multisector steering committee meetings. School consultations. Sea safety records.	Adoption of specific guidelines by provincial administrations and local level governments.  Enforcement of standards and observance of guidelines.  Adoption of preventive measures by community transport users.  Adoption and

Design Summary	Performance Targets	Project Monitoring Mechanisms	Assumptions and Risks
	Introduce mandatory requirements for boat safety equipment, safety construction, and retrofitting by mid-2006. Introduce a core curriculum for maritime primary education throughout the country by mid-2009. Republish the "Sea Safe" manual by December 2004. Complete delivery of a public awareness campaign on water craft safety by April 2005.		implementation of proposed curriculum.  Broad distribution of publications. Inadequate contract supervision of sea safety component.
Development of linkages with multisector development programs to optimized access of disadvantaged communities currently reach of these opportunities	Implement community engagement program for a value of \$1.2 million by end-2006.	Field reports. Periodic project reports. Project review missions. Tripartite meetings. Multisector steering committee meetings. Consultations with external-agency and government-funded rural programs.	Wet season delays to field work due to access difficulties
Establish a functional NMSA  Finance retrenchment package for redundant maritime staff of Department of Works and Transport  Establishment of NMSA's systems and facilities  Clearance of NMSA of backlog land claims	Pay retrenchment by mid-2003 in the total amount of \$0.65 million by April 2004.  Establish facilities and staff of NMSA in the total amount of \$0.73 million.  Clearance of land acquisition backlog and payment of land claims in estimated amount of \$1.65 million under staged 4-year program by 2009.  NMSA cost recovery revenues at K2.6 million by 2004 and K2.9 million by 2005.	Project reports. NMSA's periodic report.	Timely payouts to staff
Project management	Issue an international contract for project management by May 2004 for \$3.7 million	ADB review missions Project reports	Delays in processing by PMU and Government
<b>Inputs</b>  Trust Fund NMSA Capitalization Costs Infrastructure Small-Craft Safety Community Development Project Management	<u>\$ million</u> 11.00 3.52 3.16 1.76 1.24 <u>4.02</u> 24.70	Project implementation progress reports Project accounts and management reports Contractor quality	Technically competent consultants with country experience and knowledge. Technically and financially competent contractors

## SECTOR AND SUBSECTOR ANALYSIS

1. The Government's Medium-Term Development Strategy 1997–2002 (MTDS) places importance on providing services to rural communities. The National Transport Development Plan (NTDP) 2001–2010 confirmed these objectives and mandated the Department of Works and Transport (DOWT)<sup>1</sup> to participate in establishing rural infrastructure and transport services. NTDP also consolidates the Government's sector reform program within the context of its overall public sector reform. The National Poverty Reduction Strategy—a basis for the Government's subsequent MTDS—defines in its third pillar a pronounced need for rural and community focus in the provision of transport services and infrastructure as a critical foundation for enabling access of the rural poor to social services and economic opportunities.

### 1. Current Maritime Sector Governance

2. The principal legislation for the regulation of merchant shipping and the maritime sector is the Papua New Guinea (PNG) Merchant Shipping Act 1975, Chapter No. 242, and its subsidiary regulations as amended from time to time, and the National Seas Act, Chapter 361 (enacted 1978). This allocates to the Department of Transport (DOT), among its other functions, a responsibility for the maritime safety services. Its current structure is divided into three main areas of responsibility: transport policy and planning; the administration of transport services; and internal administration, each supervised by a deputy secretary. The Maritime Transport Division (MTD) is responsible for maintaining and developing safe and efficient water transport services in the country. The larger of MTD's two branches is the Marine Safety Branch, with the principal functions to manage (i) navigation aids, (ii) search and rescue, (iii) oil spills and disaster prevention, (iv) ship surveys, (v) port state control and small boat safety, and (vi) liabilities under international conventions. The Shipping Administration Branch is responsible for shipping and seafarers' registration, licensing, certification, and related monitoring activities, and for the administration of aspects of PNG's inland water transport system.

3. At present, however, MTD is not appropriately resourced to provide these services which, as a consequence, have seriously deteriorated to the point where half of the navigation aids are nonoperational. Additionally, MTD is unable to support the development of safe and efficient water transport. As the industry no longer receives these public sector services, it faces increased expense from having to provide maritime safety on its own, and therefore lands goods and persons at more marginal revenues. It is increasingly reluctant to pay maritime service fees, which in turn impacts on the Government's ability to finance the sector. As a result, the shippers are making expensive adjustments to voyage routes and schedules to overcome the shortcomings and the users of shipping services face expensive transport costs, as well as unreliable, infrequent, and in many cases nonexistent water transport services.

4. The Government has, with the support of a Functional Expenditure Review carried out in 2001, examined the weaknesses in this arrangement and concludes that the Department and particularly its MTD is unable to effectively discharge its responsibilities. This examination disclosed, among others, the following concerns:

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<sup>1</sup> Since preparation of the NTDP, DOWT has been divided into a Department of Works and Department of Transport (DOT), with the latter assuming responsibilities for the maritime transport subsector. No changes were implemented in DOT's structure or functions as a result of the organizational split.

- (i) unsafe boating practices are common and small craft are frequently lost at sea with the number of accidents and deaths at unacceptably high levels with particularly high casualty rates for women and children;
- (ii) there is inadequate provision of shipping services to maritime communities throughout PNG, especially to remote islands, and inadequate maintenance of wharves and jetties;
- (iii) a high proportion of the country's maritime navigational aids are not maintained and have deteriorated to the point at which only one third of the navigation aids are in service;
- (iv) MTD's capacity to license seafarers is weak, preventing the country from meeting international convention obligations;<sup>2</sup>
- (v) MTD has only limited capability to eliminate substandard foreign vessels and it is unable to fulfill its responsibilities for conducting ship surveys and inspections of PNG-registered vessels;
- (vi) the Government's fleet of vessels, which has been phased out, has not been replaced by private shipping services to the communities, resulting in under-servicing, which has adversely affected the delivery of health and education services, as well as relief supplies;
- (vii) the financial costs of search and rescue are increasing; and
- (viii) MTD has experienced constraints in raising revenue due to (i) limited collection capability, (ii) funding is not disbursed from fiscal sources as required for the Department to undertake its activities, and (iii) the budget that is received has not always been used productively.

5. The Government is implementing a navigation rehabilitation program with the support of a loan funded by the Asian Development Bank (ADB).<sup>3</sup> In restoring the maritime sector services, the Government fully recognizes that the necessary physical reconstruction of the navigational facilities and small wharves is only a partial response to the problem. This program recognizes, however, that the root causes of the deterioration of the maritime safety services are largely institutional and include (i) insufficient resources allocated for maintenance of navigation aids, (ii) lack of capacity to collect sufficient funds for operation and maintenance, (iii) lack of customer focus by management and consequent lack of targeted planning, (iv) lack of financial management and inventory control, (v) lack of clear objectives in provision of maritime safety services and navigation aids, and (vi) lack of effective community outreach and liaison with affected landowners with consequent problematic land claims and grievances and widespread vandalism of navigation aid structures.

6. The Government is, therefore, committed to a sector reform program that will establish the maritime services to international standards and install an appropriate management structure and adequate and sustainable funding. The reforms aim to improve sector management and performance, maritime asset management, and service provision, including that to remote maritime and river-based communities. Within the NTDP, the Government has already set up the Civil Aviation Authority, separating aviation and airport management operations to an autonomous statutory authority. It has furthermore prepared a submission to the National Executive Council (NEC) for the establishment of an Interim Road Authority that would be responsible for the road functions of DOWT. In the same vein, NTDP mandates the Government to undertake maritime sector reorganization and has established the National

<sup>2</sup> Particularly the International Convention on Standards of Training, Certification and Watch Keeping for Seafarers, 1978.

<sup>3</sup> ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Rehabilitation of the Maritime Navigation Aids System Project*. Manila.

Maritime Safety Authority (NMSA) with sustainable cost recovery from user charges. As a result it will separate the maritime safety functions to the planned NMSA. DOT is subsequently envisaged to develop capability to operate as a sector regulator and an intermodal transport planner.

7. A timely implementation of the sector reform plan is crucial for enabling PNG to facilitate safe and efficient marine services. The Government has embarked on the maritime sector restructuring plan and has (i) implemented increased navigation lights dues, (ii) established a trust account as an interim financial depository of the user revenues, (iii) disengaged from the *Sapura* navigation aids vessel—an inappropriate vessel for servicing the current navigation aids, and (iv) has received approval of the NEC for the preparation of oil pollution legislation for financing management of the national oil spill contingency plan and hydrographic function within the planned NMSA.

8. In establishing the NMSA, it is essential for the Government to dissolve the defunct MTD that is unable to operate under the central budget and personnel management system. The Government is currently preparing, with support of technical assistance,<sup>4</sup> a Parliamentary submission for establishment of the NMSA. This is seen as an opportunity to resolve the sector's long-standing problems. The sector has suffered from an underfunded and ineffective government agency, without the appropriate human resources or financial, information, and personnel management systems. The objective of establishing the autonomous NMSA is to endow it with a sustained and efficient capability to manage, operate, and maintain the rehabilitated navigation aids and provide maritime safety services at international standards both to international and local shipping services. The reform program will improve the cost-effectiveness of the sector, reduce shipping overheads, and help reduce the cost of transport of goods and persons to, from, and within PNG. Upon implementation of the NMSA, the balance of the reform program includes (i) establishing domestic vessel survey and search and rescue capabilities, (ii) establishing effective arrangements for collecting navigation aids dues, (iii) establishing appropriate land-lease arrangements for aids to navigation, (iv) community service contracts for their routine maintenance, and (v) providing adequate shipping services to remote communities.

9. The establishment of NMSA will enable the sector to operate more effectively as it can assume institutional accountability for the sector services as a result of (i) restoration of the navigation aids with ADB's loan funds and the Government's own contributions; (ii) increases in navigation aids tariff, and establishment of the oil pollution levy and, later, the regulatory services levy on account of the improved service levels as a result of the physical navigation aids rehabilitation and establishment of hydrographic services; (iii) implementation of management and financial management systems institutionalizing accountability; (iv) improved remuneration schemes implementing merit-based staff performance monitoring; (v) reduction in tensions between landowners and the sector services through a systematic 4-year program for payment of land-claim arrears; (vi) private sector and community involvement in the maintenance of physical assets through the improved financial position of the sector under an autonomous and self-funding institution; (vii) clarity established for sector responsibility through engagement of an NMSA chief executive officer and the identified relationship with the Government; and (viii) a transparent and viable mechanism for enabling services to the remote and water-transport-reliant communities. Under such governance conditions, the Government is confident that it can also transparently and effectively facilitate temporary subsidization of rural and remote water-transport services to communities where such minimal services are a

<sup>4</sup> ADB. 2000. *Technical Assistance to Papua New Guinea for the Maritime Sector Restructuring Project*. Manila.

prerequisite for improving basic welfare conditions and social and economic livelihoods. The reform agenda requires one-off capitalization of the NMSA to finance its establishment costs including facilities and personnel, and funding of payments to landowners for the accumulated arrears of land claims, so as to set it on a successful path from the start.

## 2. Community Water Transport

10. A direct inverse correlation exists between access to affordable and reliable water transport and the escalating level of poverty in isolated and water-transport-dependent communities in PNG. Access to transport services and ease in intermodal transition have a significant impact on production and income levels, social and economic indicators, and the overall quality and desirability of rural life. In general, the communities with access to public services and markets have also a satisfactory access to marine transportation. Deficiency in community water transport has resulted from (i) the cessation of the government-operated cargo and passenger services; (ii) inability of the private sector to service these uneconomic, low-traffic, and long routes; (iii) escalating cost of operating small outboard-motor-powered craft (“banana boats”) due to unaffordable fuel prices subsequent to the depreciating kina and escalating cost of fuel; (iv) inefficient utilization of small craft; (v) lack of credit and entrepreneurial capacity at the local level for community-owned transport services; and (vi) lack of a regulatory framework and mechanisms to ensure maritime safety.

11. The levels of water transport services in PNG vary significantly, and many rural areas suffer from a dependency on deficient water transport services and lack economical transport systems for the movement of goods and persons. Marine infrastructure is absent in many coastal and river areas with wharves and jetties nonexistent or in poor condition resulting in further reduction of economic and safe water transport. Currently, the services are unaffordable for the inhabitants of most of the remote communities and inaccessible without exhausting travel by foot or other modes. Much of the existing water transport service is provided using banana boats with high operating costs and significant safety risks. Water transport safety has also become compromised by: overloading; long-distance travel; travel at night and during bad weather; unavailability of markers; lack of safety equipment; and inadequate search and rescue procedures. Lack of a safety-oriented mentality among users and operators of water transport has, in particular, resulted in loss of life at sea and in loss of goods.

12. As the poorest of the water-transport-dependent communities primarily use chartered banana boats for travel, they are subject to about 75% of the maritime accidents and casualties that are reported in PNG waters. While reporting is extremely sketchy, an annual average of 185 lives are lost per annum; most of these are related to small boats.<sup>5</sup> Communities living in maritime and river-route areas have indicated that 88%<sup>6</sup> have lost a community member over the last 5 years due to a boating accident; citing higher rates of women and children lost. The reasons for the accidents are (i) overcrowding of small boats, (ii) poor knowledge of motor maintenance, (iii) lack of route planning and inappropriate vessel choice for the maritime conditions, and (iv) poor piloting practices. In extreme instances of overloading, a boat operator in distress puts people in the water for later pick up, while unloading the boat nearby or passengers are forced to accept a passage regardless of the maritime or piloting conditions as the fare has been paid upfront. In these communities, there was limited choice of transport and

<sup>5</sup> Analysis of the maritime accident and incident statistics reveals significant deficiencies and are not, consequently, expected to reflect the actual magnitude of the problem.

<sup>6</sup> During February and March 2002, 25 communities in five different provinces were visited and 22 communities reported loss of life and drownings during the last 5 years.

small boats were the only source of water transport. The communities further revealed that they had not seen a life jacket and that boats did not have safety equipment.

13. Extensive multifaceted community impacts arise from deficient water transport services. Inaccessible, unaffordable, and unreliable water transport in remote coastal and river areas has led to an increasing number of communities becoming marginalized from mainstream development efforts without satisfactory access to essential services and markets necessary for livelihood and survival. Although variable, the following poverty indicators and trends are evident in these marginalized areas:

- (i) income of less than one dollar per day;
- (ii) poor diet with two staple food items and high rates of nutritional deficiency;
- (iii) lack of clean water supply;
- (iv) inadequate immunization rates and rise in the rates of preventable illnesses, especially malaria and gastroenteric diseases;
- (v) low educational attainment, especially grade 6 graduates;
- (vi) systematic nonavailability of a full course of primary education; and
- (vii) low attendance at secondary school, as only around one in 30 primary school students goes on to secondary school.

14. In PNG, water transport is central to poverty reduction and economic growth. In the environment of the long- and low-traffic routes, however, many of the necessary water transport services are not financially viable and do not attract private sector operators. Nevertheless, the communities countrywide need to be served by a minimal access to district centers, regional markets for basic goods and income generation, and social services, including health and education. For the remote island- and river-based communities, water transport serves an important role in the development process, and is crucial to delivery of essential life-sustaining services such as health, education, and extension services. Transport provides access to markets and employment, and contributes to security and strengthening of nationhood by allowing the administration to reach its population. The disadvantaged communities in PNG see transport infrastructure and services as a key factor in their life and crucial to reducing the conditions that prevent them from leaving poverty behind.

15. Many of the potential users of community water transport service live in noncash communities or have a limited ability to pay for the service. The Government has committed to providing an enabling environment to reduce the scarcity of access that currently challenges the remote and rural maritime and river-based communities. Establishment of these services at a minimum and safe level and cost-effectively calls for a hybrid private-public partnership. Provision of water transport most efficiently to remote communities involves technically qualified private sector transport operators. However, these operators cannot supply remote transport services at an affordable tariff for the disadvantaged communities. The Government recognizes this in light of its past efforts to provide transport services through a government-owned vessel fleet that could not operate viably. A subsidy must be made available to enable the private sector to provide a minimum service level. As the linkages between the water transport services and poverty reduction through access to markets lead to improvement of income conditions in the rural communities, the level of the subsidy will fall. Reinforced with the planned extension services to improve the communities' awareness of the opening opportunities through the improved transport services, the generated additional need for travel and increase in income levels allows for the implementation of a break-even tariff and an exit strategy from the subsidized services. The Government can, subsequently, provide a continuing phased program,

progressively identifying the minimum necessary water transport services and targeting countrywide access coverage gradually to all remote communities.

16. The Government plans to establish a community water transport trust fund (CWTF) under a deed with a board of trustees under the purview of the Bank of PNG to finance the subsidy associated with the water transport franchise scheme. The franchise scheme will effectively enable private operators to provide transport services on nonviable routes facilitating minimal access of remote and poor communities of the country. These route franchise schemes will be tendered based on minimum-subsidy tender processes, in which the subsidy is transparent and quantifiable. The tenders will be repeated every 3 years to capture the communities' increased demand and ability to pay for the transport services. Each separate route is foreseen to become increasingly self-funding, with most reaching commercial viability in 10 years. The principal amount of the CWTF would be financed by loans provided by ADB and the Government's counterpart funds, and thus relies on ADB's support of the Government's program. The principal from the ADB loan proceeds will be invested in the international capital markets and the principal from the counterpart funds will be invested in the domestic capital market using the appropriate safeguards, controls, and monitoring mechanisms, together with a well-defined dividend policy to channel the generated revenues to finance the water transport route franchise subsidy. The generated revenues will be paid into an account opened with the Bank of PNG and the payments to the transport services providers will be paid by the Bank of PNG upon authorization of the board of trustees, triggered by requests of the project management unit. The Government has prepared a legal submission for the establishment of CWTF, and presented this to the Cabinet in June 2003.

17. The contribution that transport services and infrastructure make toward poverty reduction in the remote island and river communities, human development, and life-sustaining activities is uncontested in PNG. Linkages—between transport services and infrastructure and the potential of rural development activities for reducing poverty and raising income levels—are also recognized under the Government's poverty reduction policy. Direct linkages between community water transport and improvement in social and economic conditions, women's and children's health, educational attainment, and employment require the Government's active role in the provision of community water transport.

## SUMMARY INITIAL POVERTY AND SOCIAL ASSESSMENT

### A. Introduction

1. The objective of the Project is to reduce poverty in coastal and river communities with deficient water transportation through improved maritime services. Examination of the poverty incidence and characteristics of poverty in Papua New Guinea (PNG) revealed a strong inverse correlation between accessibility of affordable and reliable water transport services and escalating levels of poverty in isolated, water-transport-dependent areas. The research concluded that ease of access to transport services, marine and otherwise, has an increasingly significant impact on production and income levels, social and economic indicators of well-being, and the overall quality and desirability of rural life.

### B. Socioeconomic Conditions

2. With a population of 5,130,365 in 2000,<sup>1</sup> and an average growth of 2.7% from 1994 to 2000, PNG has shown only moderate population growth in comparison to other Pacific island economies, where population growth rates of 3–4% are normal. PNG has especially low social indicators when compared with its neighbors in the South Pacific. In the 2002, United Nations Development Programme (UNDP) *Human Development Report*, PNG ranked 133 out of 173 nations with only 57% of women over the age of 15 literate; the fertility rate in 1995–2000 was high at 4.6; life expectancy at birth is only 56.7 years; and 35% of all children in PNG are underweight. The Government is aware of these issues and has agreed to focus on improving the situation of its population. Improved maritime transportation, especially to rural and remote areas, will go a long way to supporting and improving social indicators and the quality of life for men, women, and children.

3. The Project will employ a systematic community outreach approach to poverty reduction by (i) enabling a water transport service to the remote and disadvantaged communities, (ii) restoring small water transport infrastructure, (iii) developing a small-craft safety mentality, (iv) developing communities' capacity to benefit from their economic potential and to maximize the use of water transport, and (v) establishing an effective sector agency through the autonomous National Maritime Safety Authority (NMSA).

### C. Government National Poverty Reduction Strategy

4. The Medium-Term Development Strategy (MTDS) (2003–2007) is the main planning document of the Government. It has adopted a theme to reduce poverty through rural development. The objectives of the MTDS are specified in the PNG National Poverty Reduction Strategy (NPRS). However, whereas the MTDS is a five-year strategy, the NPRS has been designed as a long-term strategy to be continued until all its goals and objectives are obtained. The NPRS complements the MTDS in the short and medium terms, but to carries forward into the next MTDS (2008–2013) for the long term. Participatory poverty assessments to determine appropriate poverty reducing strategies and delivery mechanisms<sup>2</sup> concluded that poverty results from weak governance, weak social support systems, inefficient use of natural resources, lack of economic and financial growth opportunities, a poorly maintained infrastructure network, and the inefficient delivery of, and lack of access to, basic services.

<sup>1</sup> National Statistical Office of Papua New Guinea. Papua New Guinea 2000 Census: Preliminary Figures.

<sup>2</sup> ADB. 2001. *Technical Assistance to Papua New Guinea for Poverty Analysis for Socioeconomic Development Strategies Project*. Manila.

7. Poverty is widespread and growing, particularly among the rural coastal and river-based communities. In the rural areas, poverty is especially bad due to sustained low levels of investment, particularly in transportation infrastructure and services, agriculture productivity, education, and health. Government outreach services are generally weak and ineffective, and in many places nonexistent. About 2,000 coastal and river village communities in PNG comprise a population of over 500,000 people—many of whom are among the country's most marginalized. These communities report that the prohibitive cost of small vessel transport has decreased access to local markets—consequently, cash incomes have progressively diminished and become unreliable. High transportation costs have also served to heighten vulnerability, restrict movement, and limit access to basic services. Vulnerability has increased among economically disadvantaged subgroups, such as women and children, as they are being excluded from transportation services.

#### **D. Government Policy for Poverty Reduction**

5. The framework of the Government's Poverty Reduction Strategy involves five pillars that are linked to expenditure priorities in the MTDS: (i) basic education, (ii) primary health, (iii) transport infrastructure and maintenance, (iv) law and order, and (v) income-generating opportunities (especially in rural areas). The third pillar of the poverty reduction strategy addresses the need to improve and maintain physical infrastructure with a goal to expand and improve the maritime infrastructure and air services. The Government is determined to resolve the current constraints to access of the rural population as the first priority. Rural and remote communities see improved marine transport services as their highest priority. The strategy recognizes that the lack of transport impedes access to the essential marketing of community products and has led to a growing withdrawal of essential social service support, particularly teachers and health workers.

6. The Project directly supports the Government's poverty strategy by supplying water transport services where no or unaffordable services exist. These services are expected to lead to both direct and indirect poverty-reducing impacts, including reduction in transport costs and subsequent improvement of rural cash incomes; improved access to markets leading to increased production and improved income generation; improved access to health services leading to increase in use of preventive versus curative care; improved access of health extension programs leading to greater vaccination rates and reduction in curable disease; and improved access, so attracting educators to remote areas currently suffering from widespread and acute shortages of teachers—this should have far-reaching implications through reduction in poor educational attainment levels. The compounding impact of these benefits of the Project will result in increased cash incomes that enable the communities to improve living conditions through small self-help projects, such as construction of water collection tanks, and improvement of the daily diet. The poor quality of drinking water and diet deficiencies are the paramount reasons for the prevalence of anemia among remote rural communities. Better diets and clean water will improve tolerance of and recovery from the widely experienced and chronic malaria and diarrhea generally contracted in early childhood.

7. The third pillar of the poverty strategy also points to the need to strengthen sector governance for water transport. Through its Transport Sector Plan, the Government has confirmed its intention to reform sector management. This is further concretized in the government policy letter, which highlights the intention to establish a National Maritime Safety Authority (NMSA)—an autonomous body with its own human resources policies, management, and focus on delivery of sector services. Legislative enactment for the NMSA is a condition of effectiveness under the proposed Project and its establishment is supported by the Project. The

structure and mandate of the planned NMSA facilitate rural services delivery and participation of the communities in maintenance activities of the small water transport infrastructure and navigation aids. The Water Transport Franchise Unit with NMSA promotes community-based approaches that are expected to increase the level of outreach activities, including the new involvement of communities in the maintenance of maritime infrastructure. Community engagement will ensure increased income generation sources in the remote areas and will fundamentally improve the Government's ability to reach marginalized segments of the population, essential for the successful operation of NMSA. The poverty reduction impacts are detailed in Supplementary Appendix A.

## **E. Indigenous Peoples**

8. The majority of both the rural and urban population in PNG is indigenous with over 800 languages spoken. There is a traditional kinship (*wantok*) system that permeates most aspects of society with reference to people speaking the same language. *Wantok* kinship links the informal social systems of the clans. The three common languages are English, Tok Pisin, and Motu, used particularly in the coastal areas. The Project will be implemented using the traditional organizational systems engaging the clans and village councils headed by clan leaders for the delivery of its community development component, small-craft safety, and infrastructure maintenance, and will not adversely impact these systems nor the indigenous peoples.

9. In the urban towns, however, small minority groups exist of Southeast Asian and Chinese descent. These minorities represent less than 1% of the population, do not inhabit the remote and disadvantaged areas, and are not located in the Project's transport routes.

10. The community development component of the Project reflects the need to respect the traditional values, systems, and beliefs and to ensure that they are not degenerated through the project activities. In the case of boating safety, the traditional methods, such as dug-out canoes that did not permit overcrowding, are considered far safer than the modern fiber-glass banana boats. The small-craft safety component of the Project aims to return to the traditional safety practices and values, reinforcing kinship and a sense of responsibility for others.

### Summary Poverty Reduction and Social Strategy

#### A. Linkages to the Country Poverty Analysis

Sector identified as a national priority in country poverty analysis? Yes	Sector identified as a national priority in country poverty partnership agreement? No. (CPPA Pending)
<p>Contribution of the sector/subsector to reduce poverty in Papua New Guinea: The Project will employ a systematic community outreach approach to poverty reduction by (i) an enabling water transport service to the remote and disadvantaged communities, (ii) restoring small water transport infrastructure, (iii) developing small-craft safety mentality, (iv) developing communities capacity to benefit from their economic potential and maximize the use of water transport, and (v) establishing an effective sector agency through the autonomous National Maritime Safety Authority.</p>	

#### B. Poverty Analysis

#### Proposed Classification

Socioeconomic profiles of the communities Along the seven proposed franchise routes.	Thematic: Sustainable Economic Growth. Poverty Classification: Poverty Intervention.
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#### C. Participation Process

Stakeholder analysis?	Yes
Participation strategy?	No

#### D. Gender and Development

Strategy to maximize impacts on women:	No
Gender plan prepared?	No

#### E. Social Safeguards and other Social Risks<sup>a</sup>

	Significant/ Nonsignificant/ None <sup>b</sup>	Strategy to Address Issues	Plan Required <sup>c</sup>
Resettlement <sup>d</sup>	None		None
Indigenous Peoples	None		No
Labor	None		No
Affordability	None		No
Other Risks/ Vulnerabilities	None		No

<sup>a</sup> Initial poverty and social analysis and/or summary poverty reduction and social strategy criteria for assessing the significance of social issues are available in the ADB *Handbook for Poverty and Social Analysis*, version available at [http://adb.org/Documents/Handbooks/Poverty\\_Social/default.asp](http://adb.org/Documents/Handbooks/Poverty_Social/default.asp)

<sup>b</sup> If not known, a contingency should be included in the technical assistance budget to predict the need of a plan.

<sup>c</sup> A plan will be required at design stage if any of the potential issues are found significant.

<sup>d</sup> Significant involuntary resettlement requires a full resettlement plan; nonsignificant requires a short resettlement plan.

### MARITIME SECTOR RESTRUCTURING PLAN

Policy Area	Policy	Completed Actions	Targets
<b>I. Adopting a Sound Policy and Institutional Framework</b>	1. The National Transport Infrastructure Plan (2001-2010)	Adoption of a National Transport Infrastructure Plan (2001-2010)  Completed in November 2000	Establishment of a Government sector program and implementation plan with a clear policy and institutional reform directions for the maritime transport subsector, including establishment of an autonomous National Maritime Safety Authority (NMSA) as a separate self-funding agency of the Department of Transport (DOT) and the Government, and with DOT retaining transport regulatory and planning functions
	2. A Functional Expenditure Review of the Transport Sector	National Executive Council (NEC) approval of recommendations of the functional expenditure review  Completed in October 2001	Clear recommendations adopted by Government for improvement of Transport Sector reform
	3. Restructuring Plan National Maritime Safety Authority	NEC approval of a maritime sector restructuring plan  October 2002	Restructuring plan with a clear phased program including a schedule for approval of legal establishment of NMSA: adoption of legal framework for the NMSA and amendments to affected laws; NMSA's financial statements outlining NMSA's establishment costs including human resources retrenchment program and a clear program for payment of the land arrears
	4. National Executive Council approval of the NMSA bill	NEC approval of NMSA bill for legal drafting  November 2002	Cabinet approval of NMSA bill
	5. Parliamentary approval of the National Maritime Safety Authority Act	Passed in Parliament 24 September 2003  Legal Gazetting of the NMSA bill scheduled November 2003	Proclamation of the NMSA establishment of NMSA
<b>II. Promoting Maritime Safety as a Government's Priority</b>	1. National Oil Spill Contingency Plan	NEC approval of a National Oil Spill Contingency Plan  Completed in 1998.	Clear plan of action for prevention and management of oil spills in accordance with International Convention on Oil Pollution Preparedness, Response, and Co-operation (1990)
	2. NEC approval of Cost Recovery Policy	Increase of navigation aids tariff	NMSA's annual cost recovery collections as follows: 2003 K2.6 million

Policy Area	Policy	Completed Actions	Targets
	for Maritime Services:  Adoption of a revised collection for navigation aids dues  Implement increased tariff	Completed on 1 April 2000  Completed on 1 April 2000	2004 K2.9 million
	3. Disengagement from Sepura Navigation Aids Vessel	Disengagement from the unnecessary vessel assets  Completed in December 2000	Ceasing the inefficient use of budget
	4. Establish a trust account under the Financial Management Act authorizing the Maritime Safety Branch	Separation of cost recovery revenue from consolidated fiscal revenues  Completed in February 2001	Establish and begin operating an off-budget financing mechanism enabling sector activities to become self-funding in the interim phase prior to establishment of NMSA with its independent revenue collection authority
	5. Introduction of the Protection of the Sea Levy to help finance services of NMSA and the National Oil Spill Contingency Plan	NEC approval of the Protection of the Sea Levy November 2002	Parliamentary approval of the Protection of the Sea Levy to ensure financial sustainability of the NMSA and its activities under the Oil Pollution Plan
	6. Parliamentary approval of Protection of the Sea Levy	Parliamentary approval in June 2003	Parliament approves Protection of the Sea Levy
<b>III. Providing Water Transport Services to Poor and Remote Communities</b>	1. NEC approval for water transport franchise scheme for poor and remote communities and related financing and governance arrangements	NEC approval for community water transport franchise scheme  June 2003	Approval for private sector provision of water transport services to remote and poor communities under tendered franchise schemes

Policy Area	Policy	Completed Actions	Targets
	2. NEC approval for Trust Fund to finance a subsidy associated with the water transport franchise scheme	NEC approval for establishment of a Trust Fund  September 2003	NEC approval for presenting the Trust arrangement to the Parliament
	3. Parliamentary approval of the Trust to finance a subsidy for the water transport franchise scheme	Legal gazetting of the Trust  January 2004	Legal framework of the Trust invested for generation of funding for the community water transport schemes with clear control, monitoring guidelines, dividend policy, and audit arrangements
	4. Appointment of Board of Trustees to manage the Trust	NEC approval of the Board of Trustees  February 2004	Appointment of the Trustees with clear monitoring and control arrangements of the Trust

## EXTERNAL ASSISTANCE

There are no other external agencies involved in the maritime transport sector, with the exception of the cofinancing by the Australian Agency for International Development for the maritime sector restructuring project.<sup>1</sup> However, complementarity exists between external agency-supported rural development programs and the Project. These programs include agricultural and health extension services, HIV/AIDS awareness and prevention programs, and rural development. See Table A5.

**Table A5: External Assistance to the Sector**

Sector Area	Asian Development Bank Activities	Other Development Partners
Private Sector Development	Microfinance	Microfinance (Australia, United Nations Development Programme)
Education	Skills Development	Community Development (Australia, Japan)
Health	Health sector development project to support health in rural areas	HIV/AIDS (Australia) Training of health personnel (Australia) Women and children health services (Australia, Japan)
Infrastructure	Maritime Navigational Aids Maritime Transport Management Coastal Fisheries Management and Development Project	Rural Coastal Fisheries Development Project (European Union)
Environment	Coastal Area Management	Marine Protected Area Management (World Wildlife Fund)
Agriculture	Improving Service Delivery at Provincial Level	Agricultural Marketing (New Zealand)

<sup>1</sup> ADB. 2000. *Technical Assistance to Papua New Guinea for the Maritime Sector Restructuring Project*. Manila.

## COMMUNITY WATER TRANSPORT TRUST FUND

### A. Introduction

1. The shipping franchise scheme, and the marine infrastructure to support the second to fourth phases of the scheme, will be financed by means of a dedicated fund, the Community Water Transport Trust Fund (CWTF). The CWTF will be an investment fund established under a trust deed and hosted by the Bank of Papua New Guinea (BPNG). It will be established as a trust, with the initial capital supplied by the Government counterpart funding (\$1 million), and loan funds of the Asian Development Bank (ADB) (\$10 million). The CWTF will be (i) placed under management by one or more reputable fund managers, selected through competitive tender, or (ii) invested directly in investment funds. The counterpart contribution of \$1 million equivalent will be invested in the domestic capital market and the capital of the loan proceeds invested in the international investment funds, taking a conservative investment approach (similar to that for pension funds).
2. The shipping franchise scheme will be introduced in phases, the first phase at one-and-a-half years after project commencement, and the second, third, and fourth phases at 3-year intervals thereafter. Technical reviews will be carried out at the end of each phase, with a major such review at the start of the second phase (5 years after the franchise scheme commencement). Shipping franchise contracts will be awarded to the private sector, on a minimum payment (subsidy) basis to operate services to specified points of call, to an agreed frequency and technical specification. Details of the shipping service franchise are given in Supplementary Appendix B.
3. A dedicated operating account for the CWTF will be opened and held at BPNG. On a quarterly basis, drawings will be repatriated from the invested funds, sufficient to meet the quarterly funding requirements of the shipping franchise scheme together with drawings to finance the infrastructure development component of the Project in later years. The quarterly drawings will be paid into the BPNG account, where they will be held temporarily, pending disbursement against certified invoices for services performed. The account will maintain only sufficient funds to meet the immediate payment commitments and the administrative costs of operating the CWTF.
4. The trustees of the CWTF will be the Governor of BPNG, the Secretary to the Treasury, the Secretary of Planning and Rural Development, and the Secretary of Transport. The project management unit (PMU) will act as a secretariat to the trustees. The powers and responsibilities of the trustees, the trust secretariat, and the legal framework for establishing the CWTF are outlined in section C of this Appendix and detailed in the draft deed given in Supplementary Appendix B.
5. PMU will authorize invoices from the shipping franchise operators for payment by BPNG, subject to any deductions for underperformance. The quarterly meetings of the trustees will authorize BPNG to subsequently effect payment through the commercial banking system.
6. The CWTF will have a life of 20 years, at the end of which all of the capital and interest earned by the CWTF will have been drawn down, in payments to the shipping operators and to fund supporting marine infrastructure (such as small wharves, jetties, landing ramps, moorings, cargo sheds).

## **B. Financial Costs of the Shipping Franchise Scheme**

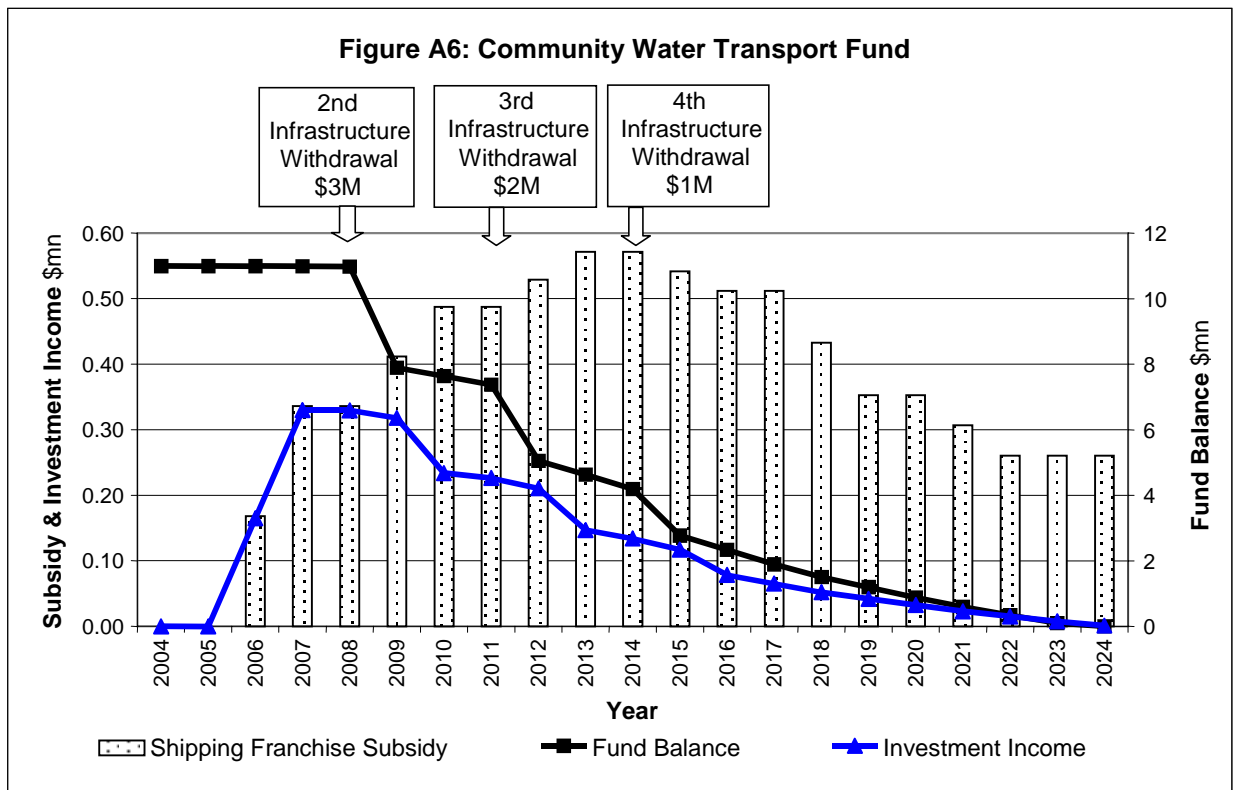
7. Each phase of the franchise scheme comprises a number of service routes. The first phase routes are identified and comprise: (i) Upper and Lower Sepik, (ii) Ramu River Coast, (iii) Morobe Coast, (iv) Oro Coast, (v) South coast of East and West New Britain, (vi) South coast of New Ireland, and (vii) South Fly River and southern coast of Western Province.

8. The number of service routes that can be included in the first phase will be limited by (i) the tender prices submitted by shipping operators and (ii) the earnings from the CWTF. Under conservative assumptions, the \$11 million is expected to generate an annual income of at least \$330,000, corresponding to a 3% real rate of return, which would be available for financing the first phase franchise scheme.

9. The introduction of affordable shipping services to communities that are either not served at all or only at a very high cost is forecast to release latent demand to participate in cash-income-producing activities such as smallholder cash crops (copra, cocoa, rubber), fishing, vegetables and spices, livestock, and handicrafts. There will be a corresponding increased demand for imported store goods. The shipping service will also provide opportunities to access social services, in particular health and education, and for the Government to more economically and effectively deliver extension programs for these services as well as for agriculture and small business.

10. The improved income, health, and education status of villages served by the shipping services will make shipping services gradually more affordable as demand increases, generating economies of scale, and the ability of the target population to afford nearer to commercially viable tariff increases. It is estimated that for most of the areas served, full commercial sustainability can be reached in a period of 9 years, after three rounds of service tendering. Accordingly, the subsidies would progressively fall, by one third of the original amount at each subsequent re-tender, falling to zero by year 9. Subsequent phases of the subsidy scheme would similarly achieve increasing commercial viability over time although, as the scheme is extended to more remote areas with thinner transport demand, a larger proportion would remain reliant on subsidies. These residual subsidized routes are estimated to account for 10% of the first phase scheme, 20% of the second phase scheme, 30% of the third phase scheme, and 40% of the fourth phase scheme.

11. Infrastructure to support the later phases of the scheme is estimated to cost \$3 million for the second phase, \$2 million for the third phase, and \$1 million for the fourth phase. This would require drawings of these capital sums in years 6, 9, and 12 of the Project. The franchise scheme subsidy would be met out of interest from the invested capital up to the end of the first contract period (year 4.5). In later years, a progressively increasing proportion of the subsidy payments will be met from capital, as the CWTF is drawn down, until year 20 when the CWTF is exhausted. At that point all residual franchise routes that have not achieved commercial viability will either require continuing direct budget support or an alternative funding mechanism, or will be abandoned. The technical review at the start of the second phase of the scheme (year 5), will consider the need or desirability of supplementing the CWTF with additional capital. The projected CWTF balance and subsidy payments are shown in Figure A6.



Source: Asian Development Bank estimates.

### C. General Legal Framework

12. The establishment of a trust for the CWTF specifically dedicated to the financing of (i) the subsidies for the water transport services and (ii) small water transport infrastructure civil works after the first phase of the Project, is considered as an appropriate legal tool to ensure that the funds allocated for these specific purposes are actually used only for these purposes and separated from other funds of the Government.

13. It is not deemed necessary to establish the CWTF under separate and specific legislation as the concept of trust is familiar and part of the laws of PNG. The Office of the Solicitor General has confirmed that the trust fund could appropriately be established as a trust created under the trustees and Executors Act, Chapter No. 289 rather than as a trust account under the Public Finance (Management) Act 1995.

14. The Loan Agreement between PNG and ADB will include a clause specifying that the CWTF is exempt from any tax or duty in PNG in order to ensure that the CWTF benefits from such exemption in accordance with Part IV(8) of the Loans and Assistance (International Agencies) Act, Chapter No. 132.

15. The actual establishment of the CWTF as a trust fund will require the Government of PNG to enter into a deed of trust with trustees whereby the Government of PNG will settle an amount equivalent to \$11 million on the trustees who will have the obligation to use and administer these funds in accordance with the terms of the deed of trust.

## **1. Major Terms of the Community Water Transport Trust Fund**

### **a. The Trustees**

16. There will be four trustees of the CWTF, including the **[Governor of BPNG,]** the Secretary of the Treasury Department, the Secretary of the Department of Planning and Rural Development, and the Secretary of the Department of Transport. Decision making by the trustees will require unanimous approval of the four trustees.

### **b. Use of the Funds Held in Trust**

17. The trustees can use the funds only for three purposes: (i) investment through fund managers, or direct investment in investment funds, (ii) distribution to the water transport operators that are awarded one or more franchise transport route by the PMU, and to pay for small water infrastructure civil works contracts under phases 2, 3 and 4, and (iii) expenses relating to the administration of the trust (audit expenses, fund managers, etc.).

### **c. Investment Policy of the Community Water Transport Trust Fund**

18. The trustees will (i) appoint one or more fund managers,<sup>1</sup> acceptable to ADB, which will manage the investment of the funds of the CWTF, or (ii) invest funds directly in investment funds. The capital of \$1 million equivalent provided from the counterpart funds will be invested in the domestic capital market and the capital from the loan proceeds of \$10 million will be invested in the international capital market. The trustees will approve the investment policy of the CWTF; however, the deed of trust will provide that the investment must be made on a conservative basis.

### **d. Distribution Policy of the Community Water Transport Trust Fund**

19. The income from the investment of the funds or the principal amount of the fund will only be repatriated as and when needed to make payments relating to the water transport contracts, small water infrastructure contracts, or administrative expenses.

### **e. Disbursements**

20. The CWTF will open a kina account with BPNG where the income and principal of the investments will be repatriated from time to time (see para. (d) above). All expenditures of the CWTF will be debited from this account. Withdrawals from this account will only be effected by check or wire transfer. Members of the PMU shall perform the function of a secretariat to manage the day to day non-financial administration of the CWTF. The secretariat shall be accountable to the Trustees and support the Trustees. The checks or wire transfer instructions will need to be signed by at least two trustees.

### **f. Termination**

21. The CWTF will not be established on a perpetual basis and will terminate 20 years after the date of its creation.

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<sup>1</sup> Fund managers will be selected in accordance with ADB's *Guidelines on the Use of Consultants*.

## **2. Control by Asian Development Bank**

22. The deed of trust will include a provision whereby it cannot be amended without the prior consent of ADB. Noncompliance with this provision will allow ADB to suspend or terminate the ADB loan.

## DETAILED COST ESTIMATES

(\$'000)

Cost Estimates				Financing Plan									
Description	Foreign Costs	Local Costs	Total	Government			Opec Fund			ADB			Total
				Foreign Costs	Local Costs	Total	Foreign Costs	Local Costs	Total	Foreign Costs	Local Costs	Total	
<b>A. Base Costs</b>													
1. Community Water Transport Fund	10,000	1,000	11,000		1,000	1,000.0	0	0	0	10,000		10,000	11,000
2. MSA Capitalization Costs	730	2,791	3,521	0	2,145	2,145.0	0	0	0	730.0	645.6	1,375.6	3,521
a. Facilities and MIS	730	0	730	0	0	0	0	0	0	730		730.0	730
b. Human Resources	0	646	646	0	0	0	0	0	0		646	645.6	646
c. Land Claim Arrears	0	2,145	2,145	0	2,145	2,145.0	0	0	0	0	0	0	2,145
3. Infrastructure	1,219	2,845	4,065	0	657	657.0	1,219	1,882	3,102	0	306	306	4,065
4. Safety Improvement	1,192	603	1,795	0	603	603	0	0	0	1,192	0	1,192	1,795
Community Safety Awareness	288	96	384	0	96	95.8		0	0	288	0	288	384
Small Craft Safety	396	256	652	0	256	255.6		0	0	396	0	396	652
Radio Equipment and Installation	508	252	760	0	252	251.7		0	0	508	0	508	760
5. Community Development	920	345	1,265	0	345	345	0	0	0	920	0	920	1,265
Consulting Services	920	345	1,265	0	345	345	0	0	0	920	0	920	1,265
6. Project Management	3,148	929	4,077	0	101	101	0	0	0	3,148	828	3,976	4,077
a. Project Implementation	2,896	828	3,724	0	0	0		0	0	2,896	828	3,724	3,724
b. Civil Engineering and Supervision	252	101	353	0	101	101		0	0	252		252	353
<b>Subtotal A</b>	<b>17,209</b>	<b>8,513</b>	<b>25,722</b>	<b>0</b>	<b>4,851</b>	<b>4,851</b>	<b>1,219</b>	<b>1,882</b>	<b>3,102</b>	<b>15,990</b>	<b>1,780</b>	<b>17,770</b>	<b>25,722</b>
<b>B. Contingencies</b>													
1. Physical Contingency on Civil Works <sup>a</sup>	987	1,092	2,080	0	183	183	244	654	898	744	255	999	2,080
1. Physical Contingency on Civil Works <sup>a</sup>	244	569	813	0		0	244	569	813			-	
2. Physical Contingency on Consultants <sup>e</sup>	331	98	428	0	98	98		0	0	331		331	
3. Price Contingency <sup>b</sup>	413	426	839	0	85	85		85	85	413	255	668	
<b>C. Interest During Construction</b>	<b>337</b>	<b>0</b>	<b>337</b>	<b>101</b>		<b>101</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>236</b>		<b>236</b>	<b>337</b>
<b>Subtotal B</b>	<b>1,325</b>	<b>1,092</b>	<b>2,417</b>	<b>101</b>	<b>183</b>	<b>284</b>	<b>244</b>	<b>654</b>	<b>898</b>	<b>980</b>	<b>255</b>	<b>1,235</b>	<b>2,417</b>
<b>Total</b>	<b>18,534</b>	<b>9,605</b>	<b>28,139</b>	<b>101</b>	<b>5,034</b>	<b>5,135</b>	<b>1,463</b>	<b>2,536</b>	<b>4,000</b>	<b>16,969</b>		<b>16,969</b>	<b>26,104</b>

<sup>a)</sup> 20 percent for civil works and 10 percent for consultant services .

<sup>b)</sup> 7 percent on local costs; 2.4 percent on foreign costs.

Source: Consultants' estimates

Counterpart Funds per Year:	856	
Counterpart Funds in Next Yrs (Kina):	1,849	
Counterpart Funds in First Year in Kina:	3,130	
Total Counterpart Funds in Kina:	16,073	
K/\$:	3.13	

812.91

14.2%

74.52%

60.3%

93%





**TENTATIVE LIST OF CONTRACT PACKAGES**  
(\$ million)

<b>Contract</b>	<b>Description</b>	<b>Mode of Procurement</b>
1. Facilities of the National Maritime Safety Authority	Computers, printers, copiers, fax machines, telephones, software, vehicles, furniture	IS
2. Small Water Infrastructure	Phase 1 Restoration of Small Water Transport Infrastructure	ICB/LCB <sup>1</sup>
3. Radio Equipment	High and very high frequency radios	LCB

<sup>1</sup> Contracts below \$1 million can be awarded under local competitive bidding procedures.

ICB = international competitive bidding, IS = international shopping, LCB= local competitive bidding.

## ECONOMIC AND FINANCIAL ANALYSES

### A. Introduction

1. The Project focuses on delivery of water transport, improvement in marine infrastructure and safety services, and community services to maximize use of the transport provided. Additionally, the Project supports maritime sector reforms and institutional transformation. Economic analysis is prepared for the delivery of the water transport services and infrastructure improvements.

### B. Economic Evaluation of the Community Water Transport

2. The rural areas of Papua New Guinea (PNG) have access to few or no commercial vessel services. These have declined particularly over the last 20 years as commercial vessel operators have withdrawn services and the PNG Government disposed of its fleet of 51 vessels that served many areas of rural PNG. Much travel and carriage of goods at the village level now involves the use of banana boats. The banana boat's outboard motor also typically consumes 30 liters/hour (l/h) at a cruising speed of 20 knots, and the unit cost (in kina per passenger-kilometer (km) or ton-km) is, consequently, very high. The cost of fuel dominates the costs of running banana boats; in financial terms, fuel comprises over 90% of total ownership and operating costs for voyages in excess of 100 km and reaches 70% for short voyages. In many cases, the cost of banana boat travel has become the cost of fuel. There are about 10,000 banana boats in PNG, with about half of them operational.

3. The rising cost of gasoline in kina terms, largely because of the currency depreciation, has exacerbated the effects of the high fuel consumption of outboard motors. A majority of villagers have reduced travel because of the high cost of banana boats. A more economical option is the workboat, an enclosed vessel with cargo holds and deck of 10 meters in length and powered by a diesel engine. These carry 10–20 tons of cargo and 15–25 passengers, and consume 10–15 l/h of diesel fuel.

4. Economic values in the analysis of costs and benefits were obtained by extracting taxes and duties adjusted to their local values using a shadow exchange rate factor of 1.1. The seven individual vessel service cases evaluated as part of the study are presented below. These cases are the South Fly District of Western Province, the Oro Coast of Oro Province, the Huon Coast of Morobe Province, the Rai Coast of Madang Province, the Sepik River in East Sepik Province, the south coast of New Britain, and the southeast coast of New Ireland.

5. The “without project” case in these evaluations involves continuation of present community water transport services, primarily by banana boats. The “without project” and “with project” situations differ in terms of demand for passenger and cargo transport and charges for passenger and cargo transport services.

6. Each service includes initial capital costs for workboats and fast passenger vessels, and for lighters. The costs every 5 years reflect replacements or major rebuilds of engines in the boats. The principal capital costs of providing transport services to the remote and disadvantaged communities relate to vessel acquisition. Estimation of these was based on prices prevailing in PNG in 2001. In the place of new infrastructure in the vessel evaluations,

costs were estimated for lightening<sup>1</sup> cargo in ports without existing fixed infrastructure. Banana boat lighters were assumed to be dedicated to lightening services and otherwise idle. The capital costs of four such vessels were allocated to the vessel service for each village port requiring lightening, and operating costs were estimated for the times in which the boats are providing lightening services. This assumption is conservative in that banana boats have alternative uses such as local transport, and they are likely to provide functions other than lightening. Although the capital costs of these lighters are part of the economic evaluation, the lighters do not form part of the community transport Project. Customers of the vessel services, villages, communities, trade store owners, individuals, etc. would provide the lightening arrangement and this would come from the existing fleet of some 10,000 banana boats in PNG.

7. A trust fund of \$11 million will be established to provide subsidies to the vessel services that evolve as a consequence of the Community Water Transport Project. As this fund is a necessary part of the vessel service project—without it and the subsidies it provides there would be no vessel services—it is an economic cost of the project. The trust fund was added as an initial expenditure and as a residual at the end of the project evaluation period. It is assumed that the investments in the fund allow it to retain its initial value in constant-dollar terms. The value of the fund in 2001 kina is estimated at K55 million including the shadow exchange rate factor. On this basis, the present value of the residual value of the fund over 20 years at a 12% discount rate is about K6 million. If the seven individual vessel service cases examined in this study are about one quarter of all vessel services, the allocation of the trust fund to each individual service is about K2.0 million. The value of the trust fund (K2.0 million in economic terms) is added as an initial cost and as a residual at the end of the project evaluation period. It is assumed that the investments in the fund allow it to retain its initial value in constant terms. Operating costs comprise vessel costs of crew, maintenance, and fuel at sea and in port. Direct overhead costs of operating the fleet were estimated at 25% of vessel operating costs.

8. Benefits were considered to have three transport components:

- (i) **Enhanced mobility.** Villagers are currently constrained from traveling from their homes to district and provincial centers due to the lack and unaffordable cost of water transport.
- (ii) **Inward transport of village supplies.** The lack and unaffordable cost of effective water transport constrain currently the ability of village residents to bring goods into their communities, either through direct purchase or through commercial routes such as trade stores.
- (iii) **Outward transport of village products.** These include export of produce, seafood, crafts, and products of tree crops such as copra and cocoa from the communities to the district and provincial markets. The provision of economical and regular vessel services will enhance the ability of villages to produce goods to sell for cash, which in turn will generate other development benefits and increase incomes at the community level.

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<sup>1</sup> Banana boats (open-bull 19–23 foot boats with no seating or safety facilities, rated for 6–8 persons with a speed of 20 knots) and dug-out wooden non-motorized canoes are traditionally used for transferring of cargo or passengers (lightening) to and from shore as an alternative to fixed marine infrastructure such as a jetty. Consideration was given to the productivity of the two options with the lightening productivity estimated to be 0.5 tons an hour in good sea conditions (calm, sheltered water), and as low as 0.1 tonnes an hour in rough weather before operations cease, in the examination of the transfer of cargo between an 18-ton workboat and shore by banana boat lighters in comparison with the use of a jetty.

9. Benefits were measured by estimates of willingness to pay for cargo and passenger transport services from the evaluations for varying voyage lengths. The EIRRs<sup>2</sup> of the seven cases ranged from 13% to 38% with the economic net present values (NPVs) ranging from K0.2 million to K5 million.

### 1. Financial Internal Rate of Return

10. The financial evaluation incorporated revenues instead of benefits. All costs in the financial model were in financial terms. Each service includes initial capital costs for workboats and fast passenger vessels, and for lighters. The costs every 5 years reflect replacements or major rebuilds of engines in the boats. Operating costs comprise costs of crew, maintenance, and fuel at sea and in port. Direct overhead costs of operating the fleet were estimated at 25% of vessel operating costs. Operating costs include an allowance for the general overhead costs of the companies that will likely operate the vessel services. Revenue was measured by estimates of willingness to pay for cargo and passenger transport services from the evaluations for varying voyage lengths. The FIRRs<sup>3</sup> for the individual services range from a negative value to 17% and average 7%. The cost of borrowing in kina in PNG is typically 20% in nominal terms (10%-15% in real terms) and loan terms are typically 5 years. Because virtually all of the FIRRs are lower than the real cost of borrowing, the vessel services will require subsidies.

### 2. Subsidization of Community Water Transport

11. The financial evaluations of the seven vessel services indicate that most of the community vessel services are unlikely to be financially viable without a subsidy. Additionally, the FIRR calculations of the financial analysis do not address all the conditions that a private sector operator faces in the development of private vessel services in PNG. The subsidy for the vessel operations was calculated as the amount of additional revenue that is necessary to provide a 15% real, after-tax FIRR on equity capital. Only under these conditions will the community transport franchise scheme be able to apply the private-public partnership model proposed under the Project. The subsidy was structured over three time periods with level annual subsidies within each period: an initial 3 years, a second 3 years at a subsidy level of 2/3 that of the first period, and a final 4 years at a subsidy level of 1/3 that of the first period. Beyond the 10<sup>th</sup> year, the subsidy is zero. All seven-vessel services are assumed to be bid for an initial 3 years and then re-bid for one subsequent 3-year period and for a final 4-year period. This approach captures traffic growth and related improvements in operational efficiency over the period. The capital charge components of the operators' costs were estimated at 25% of the replacement cost of the vessels required for the services. This is a conservative assumption because after a few bidding periods, there will be a supply of vessels that already have been partially depreciated and operators may accept a lower level of capital charges that reflect these depreciated values. The resulting average subsidy for these seven vessel services is estimated in 2001 kina at K280,000 a year per service for the first 3-year period, K100,000 a year for the second 3-year period, and K50,000 a year for the final 4-year period. The actual subsidies in aggregate will depend greatly on the nature of the vessels that operators propose, the timing of the introduction of the vessel services, and business conditions in PNG.

<sup>2</sup> The economic internal rate of return (EIRR) equalizes the present values of economic costs and benefits that accrue to the national economy. An economic net present value of the Project reflects returns in excess of the discount rate of 12%.

<sup>3</sup> The financial internal rate of return (FIRR) equalizes the present values of financial costs and benefits that accrue to the national economy. A financial net present value of the Project reflects return in excess of the discount rate of 12%.

### 3. Distribution of Project Effects

12. The project effects are divided between the vessel operators (corporate), government/economy, and consumer sectors—the vessel users. The main benefit is to the government/economy through resource cost savings, net of the cost of the trust fund. Vessel users also receive reductions in their costs of vessel transport.

#### C. Evaluation of Maritime Infrastructure

13. Most of the maritime and water-transport infrastructure installations in PNG including jetties, wharves, and pontoons are in poor condition. A number of them are unusable in their present condition. While in many cases, the water transport services can operate without fixed infrastructure, significant penalties in efficiency and safety apply in such conditions. In some cases, however, infrastructure investments are a necessary part of new vessel services.

14. The infrastructure restoration under the Project involves tradeoffs between cargo handling efficiency with and without the Project, and the cost of lightering, cargo damage with lightering, and the costs of the project. In the case of cargo damage due to lightering, a unit cargo value of K3,000 per ton was estimated from surveys of inbound village goods, which are the dominant category of products, and K500 per ton for outbound produce. It was assumed that the damage factor for lightered cargo is 2% of its value.

15. The capital costs of infrastructure works were estimated from site inspections, general engineering evaluations of needed improvements, and contractor prices prevailing in the PNG market. The financial costs were adjusted to economic costs by applying a shadow exchange rate factor to the foreign component of costs and by removing taxes. The annual costs of maintenance were estimated from the nature of each facility and periodic maintenance adjusted to a level annual cost. The financial costs were adjusted to economic costs by removing taxes.

16. Of 63 infrastructure projects, a total of 40 sites passed the screening process at a financial cost of about K16 million. The calculated EIRRs of the 40 range from 12% to 38%. Some of the projects are sensitive to a small variation in capital costs and benefits. A 10% increase in capital costs results in 11 projects with an EIRR of less than 12%, and a 10% decrease in benefits results in 17 projects with an EIRR of less than 12%. The overall average sensitivity indicator for benefits is 4.32 and for capital costs minus 3.05. Switching values provide the percentage change in a variable tested in the sensitivity analysis that brings the EIRR to 12%, the cut-off rate for small water transport infrastructure to be eligible for funding under the Project. For the individual projects, the switching value for benefits ranges between 37% and 102% of the base values of benefits, and the switching value for capital costs is between 97% and 285% of the base values of capital costs. For all projects together, the switching value for benefits is 77% of the base value of benefits and for capital costs it is 133%. The overall infrastructure project generates an EIRR of about 17% and a net present value of about K4.4 million.

17. The economic and financial evaluation models were used to estimate the distribution of project effects in terms of net present values. The project effects are divided between the vessel operator (corporate), government/economy, and consumer sectors (in this case passengers and cargo owners). The corporate sector (vessel operators) benefits in a minor way because of savings in ship time due to higher cargo handling productivity with the infrastructure. Vessel users (passengers and cargo owners) benefit from avoidance of lightering costs and cargo

damage. The burden of the costs falls on the government or the economy in general because of the minor revenues from infrastructure operations and the relatively large capital expenditures.

#### **D. Conclusion: Evaluation of Overall Project**

18. The overall project comprises the vessel services and infrastructure improvements discussed above. It also includes a major focus on maritime safety such as vessel legislation and regulation, marine communication systems (VHF facilities), and enhancement of search and rescue.

19. The quantifiable benefits of the Project are discussed above. The water community transport franchise scheme benefits comprise resource cost savings to the economy and the consumers' surpluses accruing to induced traffic. The benefits from marine infrastructure include improved cargo handling productivity, and avoided costs and cargo damage associated with lightering.

20. The overall project will generate a number of benefits that have not been quantified in the evaluation. These include:

- (i) **Improvements in maritime safety.** These would evolve from direct efforts aimed at education of vessel operators and users, modifications to legislation and regulations, and improvements in marine communications and search and rescue. They would also result from the introduction of safer vessels as part of the project.
- (ii) **Improvements in social services.** These would result from better services at the local level and increased mobility of villagers to regional and provincial centers.
- (iii) **Reduction of the maritime transport constraint on rural development.** The existence of a vessel service would allow further development of cash crops and other village products.

## SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

### A. Introduction

1. This summary initial environmental examination (SIEE) report summarizes the results of an initial environmental examination (IEE) of a proposal to replace the provincial jetty at Kandrian, West New Britain Province, Papua New Guinea (PNG). This environmental study was carried out on 7 November 2001 according to the Asian Development Bank (ADB) Guidelines for Environmental Assessments and for Selected Infrastructure Projects (Ports & Harbors) (ADB, 1993, 1998).

2. This IEE study for Kandrian forms part of a larger investigation of a subset of sites drawn from 170 infrastructure developments proposed at locations spread throughout the riverine and maritime provinces of PNG. Twenty-one of the sites were examined by IEEs, and a further 14 examined more informally. These were used to develop generalized guidelines that could be applied at sites not specifically covered by the IEEs.

### B. Description of the Project

3. It is proposed that the jetty at Kandrian be reconstructed as a development under technical assistance (TA) 3615-PNG: Community Water Transport Project.<sup>1</sup> This project preparation TA was carried out through the PNG Department of Works and Transport (DOWT) and sought to examine mechanisms for improving water transport for coastal and river communities throughout the country. The focus of the study was on maritime safety and improving shipping services and infrastructure.

4. The project site is located in a protected harbor, northwest of Cape Anukur on the south coast of West New Britain, PNG. The location of the existing jetty is at 06 12.682' South and 149 32.846' East and faces out to the harbor at a bearing of 92.

5. The project concerns the rehabilitation of part of the existing jetty structure at Kandrian, and the construction of a new jetty head. The existing jetty consists of a short filled causeway leading out to a concrete platform constructed on gabions. The existing causeway seawalls are in poor condition despite the sheltered wave environment, and it is expected that the jetty will deteriorate further and collapse within the next 10 years. A copra storage shed of 15 x 10 meters (m) currently exists adjacent to the jetty, is in reasonable condition and could be retained in any upgrade of the jetty.

6. The works proposed in this project are to (i) demolish the existing jetty head, (ii) repair the existing causeway seawalls and pavement as required, (iii) construct a new angled jetty with an approach structure of sufficient length to bring the berthing face to a depth of 3.5 m at lowest astronomical tides, and (iv) create a jetty head with a 15 m long berthing face and 5 m width. The jetty would be constructed from concrete encased steel piles supporting reinforced concrete headstocks and a reinforced concrete deck using precast concrete wherever possible. Bollards and rubber fenders would be supplied along the berthing face of the jetty to protect the structure and vessels using it. It is also proposed under this project that requirements be investigated during the design phase for navigation aids. It is also proposed that dredging or new seawalls are required for the project. Water, electricity and sewerage for the jetty are not included in the

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<sup>1</sup> ADB. 2000. *Technical Assistance to Papua New Guinea for Community Water Transport*. Manila.

design. The facility at Kandrian is currently used monthly by Lutheran Shipping for the import of store goods for the community and the export of locally produced copra. Any upgraded facility should be designed to accommodate the berthing of vessels up to approximately 45 m in length on an infrequent basis, with the most common berthing vessels being those of less than 20 m in length.

### C. Description of the Environment

7. The Kandrian township is located in a well-protected deepwater natural harbor that has a fjord-like structure. The entrance to the harbor is protected by three large, flat-topped volcanic islands, including Ganglo and Bugi islands, which shelter the entrance from the southeast winds and seas. Coastal sediment movements appear to be negligible and are unlikely to cause problems at future facilities located at the site. The jetty itself is located on a small peninsula that juts in a southerly direction within the harbor, dividing it further into inner and outer harbor sections.

8. The land area on and surrounding the Kandrian harbor and peninsula has been modified by conversion to urban uses including housing and gardening, but the area of influence is small and natural wet tropical forest may be found within a kilometer of the village. The land around the existing jetty is dominated by maintained grass areas and, offices, storage facilities and houses. There are domestic trees present and some coastal vegetation has been retained.

9. The subtidal area around the existing jetty comprises an unconsolidated volcanic rock slope that steeply drops off to deep water. The slope supports a relatively low diversity, but relatively high abundance of fishes, small corals, sponges and other invertebrates. The reef area is typically present only as a narrow fringe that follows the line of the harbor shore, except on the tip of the Peninsula where a backreef and mangrove area has formed. The most common corals include *Porites*, *Faviids*, *Montipora*, and *Fungiid* species. The algae *Padina* and *Dictyota* and several species of sponges are common. The backreef area consists of rock and rubble and is dominated by mudskippers, ophiuroids, the seagrass *Thalassia*, and a range of small invertebrates. The mangrove area on the southern tip of the peninsula consists almost exclusively of a small stand of *Sonneratia alba*.

10. The harbor and particularly the area around the existing jetty are in excellent ecological condition, with clear deep waters and corals showing no signs of stress. There is no evidence of sewage overload or the presence of liquid pollution that has accumulated beyond the capacity of the environment to attenuate it. There is, however, a large problem of accumulating solid wastes in the area, particularly around the jetty and the mangrove area nearby, despite the light shipping traffic. Plastics, steel banding, bits of machinery, masonry, and household garbage have been dumped into the shallow water areas around the jetty and other parts of the peninsula. The mangrove area at the tip of the peninsula has a large amount of plastic wrapped around tree bases, pneumatophores (aerial roots), and rocks that are physically disturbing the communities there.

11. The most important resources occurring around the Kandrian area are timber, land for subsistence uses, fishing and a potential for tourism. Most activities are currently being undertaken on a subsistence or cash sale basis, though there is also a logging company operating some distance to the south of the township. The site of the Kandrian jetty is not an important source of any of the locally utilized resources.

#### D. Screening of Potential Environmental Impacts and Mitigation Measures

12. Impacts associated with the construction phase of this project are expected to be insignificant and short-term. There is likely to be an increase in water turbidity in the vicinity of the jetty during demolition of the existing jetty, repair of the existing approach causeway, and construction of a new jetty head that will require the driving of new piles. The organisms living with the footprint of the works are expected to be lost, but are also expected to recolonize rapidly. There may also be increased turbidity in the water associated with the stockpiling of materials and the mixing of concrete on the land adjacent to the jetty. These impacts could be minimized by working only during the dry season so that carriage by rainwater is minimized. In general, however, the corals, sponges and other organisms living around the jetty are to some extent tolerant of sedimentation and turbidity and are expected to be able to tolerate the levels of turbidity expected with this project. The back reef and mangrove areas on the tip of the peninsula are also unlikely to suffer negative impacts from the works proposed.

13. The long-term and permanent impacts of this project are mostly limited to minor redistribution of building materials to the site and increased human traffic and use of the new facilities. Physical impacts of the new jetty will be minimal. The causeway approach structure to be retained has not in the past resulted in any problems with erosion or accretion. The new jetty head will be a piled structure and therefore largely transparent to water movements, an improvement of the conditions imposed by the existing structure.

14. Impacts of operation may include increased pollution from boats (sewage, oils, fuel, bilge, etc.) and an expected increase in solid garbage pollution by people and boats using the area. There is an existing issue of inappropriate garbage disposal at the site, which is expected to worsen if appropriate measures are not taken.

15. The project is located in a previously disturbed area and will involve little or no long-term new damage to existing ecosystems during the demolition or construction phases. Impacts of operation can be reduced through observing good practices during use of the facilities. Measures for mitigating the expected temporary and permanent impacts of this project at Kandrian are to:

- (i) limit the area of disturbance, storage of machinery and stockpiling of materials to the smallest area possible, preferably well back from the shoreline;
- (ii) carry out the construction works during the drier season to limit mobilization of sediments by runoff from the land during rain;
- (iii) realign the seafloor as close as possible to original conditions after construction (this would include recreating the rocky substratum if necessary);
- (iv) dispose of materials from demolition of the old jetty in an appropriate location on land (this could include stockpiling for other uses); and
- (v) clean up the existing garbage in the vicinity of the jetty, including in subtidal, reef, mangrove and backreef areas.

16. Additional measures that should be considered by the local level government (LLG) and which have a broader context than this project are to:

- (i) establish a small-scale garbage service to collect and dispose of solid wastes from boats using the facility if solid wastes begin to build up in the area. This task could be carried out by the LLG; and
- (ii) establish good practices for users of the new facilities to ensure that liquid wastes and pollution from vessels (sewage, oil, bilge, etc.) are kept to a

minimum. This task could be carried out by the LLG. Vessels using the facility should discharge liquid wastes out of port, at least 0.5 kilometer away from the mouth of Kandrian harbor.

#### **E. Institutional Requirement and Environmental Monitoring Program**

17. There is no institutional or monitoring requirement for this project. The site is located in an area already disturbed by previous developments of this type. Although sensitive ecosystems are nearby, they are unlikely to be significantly affected by the scale of works proposed. Impacts of demolition and construction are expected to be insignificant and monitoring of construction effects unnecessary.

#### **F. Findings and Recommendations**

18. It is recommended that this SIEE/IEE be considered sufficient environmental screening for the project and that a follow-up environmental impact assessment is not required. The proposed developments are not likely to significantly extend any existing damage outside of previously impacted areas and are not expected to intensify effects within it providing that the mitigation measures (para. 15) given in this SIEE/IEE are followed.

19. The ecosystems at the site of the existing jetty at Kandrian have suffered damage from an accumulation of solid wastes such as plastics, steel banding, and other non-biodegradable items. Effects were noted in the surrounding coral reef, mangrove, and backreef areas. There is a need for the LLG to address these existing environmental issues in the vicinity of the Kandrian jetty using mitigation measures (para. 16), above. This work is not considered part of the project because it concerns existing conditions that are of a broader significance in the area and should be addressed regardless of whether the project proceeds.

#### **G. Conclusions**

20. An environmental impact assessment is not needed for this project. No further environmental investigations are required in connection with the demolition of the existing jetty head, repair of the causeway approach or the construction of a new jetty head at Kandrian. The mitigation measures and recommendations provided in this SIEE/IEE are expected to provide sufficient guidance to keep impacts to an acceptable minimum for the project.