Survey of the Transport Sector in Papua New Guinea

Survey Report

August 2010

Japan International Cooperation Agency (JICA)

Contents

1. The Background to and Objectives of the Survey

The development of transport infrastructure, particularly the development of the road network and land transport in rural areas, is a pressing issue that must be resolved in order to achieve economic development and the growth and reinforcement of social services in Papua New Guinea (hereinafter abbreviated to PNG). In PNG, the terrain is precipitous, which is one of the reasons why there are many areas that are not covered by the road transport network, so land transport is extremely inefficient. Moreover, as a result of such natural disasters as heavy rainfall, floods and landslides, roads are frequently closed, which has grave consequences for local citizens. In response to this, the PNG government formulated the National Transport Development Plan (2006 - 2010); of all the government's policies, a high priority was assigned to the development and maintenance of road infrastructure. In PNG, while the development of the incomplete road network is required, it is also necessary to repair the damage to existing roads and bridges that has resulted from natural disasters, such as the heavy rains that recur annually, as well as general wear and tear as the infrastructure ages; accordingly, there is a feeling that support from Japan is required.

Until now, JICA has provided assistance in the development of transport infrastructure and renovation projects in PNG, through such support as loan assistance, including the "Main Road Improvement Project", the "Transnational Highway Construction Project", and the "Port Moresby Airport Construction Project". Moreover, at the Fifth Pacific Alliance Leaders Meeting (PALM 5), the importance of developing and maintaining infrastructure in order to overcome the vulnerability of the Pacific islands was pointed out, and a policy was adopted of continuing to support the development of key transport infrastructure. However, there is scant information available in order to plan development from a medium- to long-term perspective, so it is necessary to check the latest information.

Consequently, this survey has gathered information from the PNG government, other donors and private businesses, and has gathered, analyzed and collated sectoral information from the policy level to the project level, including projects currently underway and those scheduled to be undertaken; then, the Ministry of Works, Transport and Civil Aviation will collate this as basic information to determine the issues that should be tackled hereafter as the top priority. In addition, through consultation with the Ministry of Works, Transport and Civil Aviation and the JICA office, the direction of future transport sector cooperation will be summarized and advice will be provided from a technical perspective.

In this survey, with the foregoing as the objectives, the survey team of this report consulted with the governmental institutions in charge of the PNG transport sector, such as the Department of National Planning and Monitoring (hereinafter abbreviated to DNPM), which is in charge of planning the development of the transport sector, the Department of Work (hereinafter abbreviated to DOW), which is in charge of actually constructing and renovating roads, and the Department of Transport (hereinafter abbreviated to DOT), which is in charge of overall transport planning; the survey team then gathered information and conducted a survey of the transport infrastructure sector. In particular, the survey focused on roads and bridges, including the status of maintenance, and looked at the current situation in comparison with the ports and airports. In this survey, the results of existing surveys were reviewed, and information was gathered from other aid organizations and private businesses, as well as from data held by government institutions related to transport infrastructure in PNG. This information about the transport sector from the policy level to the project level, including projects currently underway and those scheduled to be undertaken, was collated as basic information to determine the issues that should be tackled as the top priority. Moreover, through consultation with related government institutions in PNG and the JICA office, consideration was given to the direction of future cooperation in the transport sector, using loan assistance, grant aid and technical assistance.

2. The Scope and Content of the Survey

(1) Survey Target Area

As shown in Figure 1, the survey area was Papua New Guinea, including Port Moresby, Morobe Province and the island of New Britain.

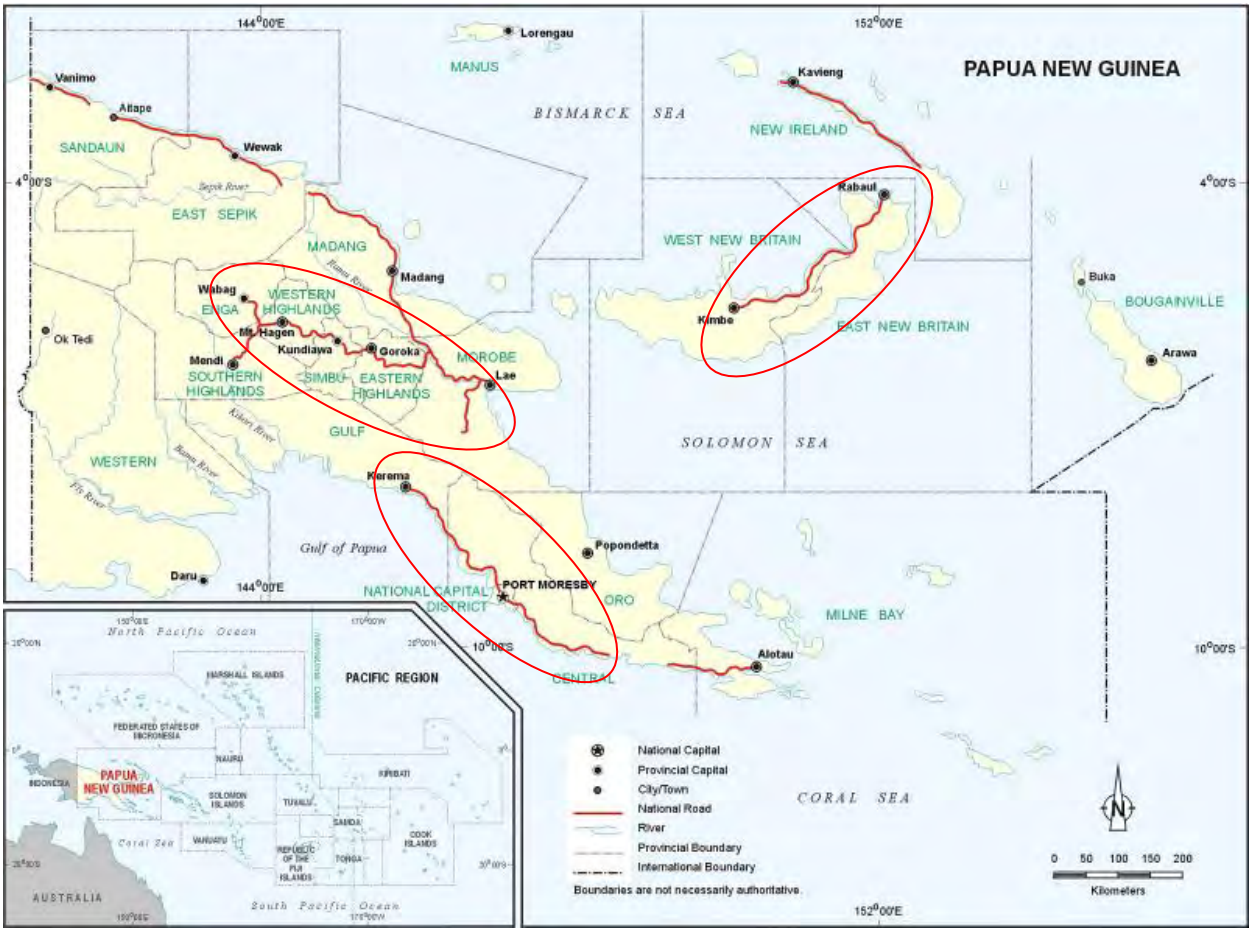


Figure 1　　Map of the Survey Target Area

(2) Scope of Survey Operations

The survey consisted of the following stages:

1. Preparation within Japan (late March 2010)
2. First local surveys (from mid-April to mid-May 2010)
3. Work conducted in Japan (late May 2010)
4. Second local surveys (from late July to early August 2010)

1) Local survey

The following surveys were carried out in partnership with members of the team working on the road and bridges plan, the ports plan and the airports plan.

1. Consultation with the JICA office and government institutions related to the PNG transport sector.
2. Verification and review of information held by the JICA office and relevant PNG government institutions.

3. Gathering of the latest policy-level information, such as policies on the development of the transport sector based on the PNG National Transport Development Plan, and development plans.
4. Gathering of information about development projects in the PNG transport sector that are currently underway or being planned.
5. Consultation with relevant government institutions and the JICA office regarding the future direction of cooperation with Japan regarding the PNG transport sector.

2) Work in Japan

A report on the content of the local survey was made to JICA's Economic Infrastructure Department.

3) Local reports
The following tasks were conducted.

1. A report was made to the DNPM about the data gathered during the local survey and discussions with PNG government institutions. Cooperation was provided in the compilation of the "Sectoral Information (Draft)" by the JICA office, concerning the consultations with the DNPM and the policy on cooperation at the next stage, based on the opinions gathered.
2. A seminar was held for relevant PNG government institutions, aid organizations and the Embassy of Japan in Papua New Guinea.
3. A report on the outcomes of the local survey was compiled and presented to JICA headquarters and the local office.

(3) Aspects Surveyed

Support was provided to the Ministry of Works, Transport and Civil Aviation and a survey was conducted, focusing in particular on the transport infrastructure in the field of roads and bridges, with comparisons being drawn with ports, airports and water transport. Based on reviews of the results of existing surveys of the current situation in these fields, and the gathering and analysis of information held by the JICA Papua New Guinea office (hereinafter referred to as the JICA office) and the Ministry of Works, Transport and Civil Aviation, information was gathered from the PNG government, other donors and private businesses. Sectoral information from the policy level to the project level was gathered, analyzed and collated, including information about projects currently underway and those scheduled to be undertaken; hereafter, the Ministry of Works, Transport and Civil Aviation will collate

this as basic information to determine the issues that should be tackled as the top priority. In addition, through consultation with the Ministry of Works, Transport and Civil Aviation and the JICA office, the direction of future transport sector cooperation will be summarized and advice will be provided from a technical perspective.

In order to complete the aforementioned survey objectives, the following aspects are considered in this report, through the local survey and information gathered from PNG.

1) The status of government activities

1. Gaining an understanding of the current situation in the transport sector.
2. Verifying the order of priorities of development plans at the national and regional level, as well as other plans in the transport sector.
3. Checking the performance of the central government in the transport sector, as well as the administrative organization, budget and staffing of regulatory bodies.
4. Cooperation with other aid organizations such as the ADB and AUSAid.

2) The road and bridge sector

1. A survey of the roles and responsibilities of PNG government institutions in the road and bridge sector.
2. A survey of policies, major projects and future plans in the road and bridge sector.
3. A survey of the current status of government institutions associated with the road and bridge sector.
4. A survey of the degree of damage to road infrastructure, including bridges.
5. A survey of the natural conditions in the survey region, including the topography, geology, rivers and climate conditions.
6. A survey of the local procurement, construction and transport situation.

3) The port sector

1. A survey of the role of port functions in PNG.
2. A survey of policies, major projects and future plans in the port sector.
3. A survey of the current status of government institutions associated with the port sector.

4. A survey of the current status of port facilities.
5. A survey of private sector involvement in the port sector.
6. A survey of problems and challenges in the port sector. If required, a survey of inland water transport will also be conducted.

4) The airport sector

1. Verification of the national plan for the air transport sector.
2. Information gathering and a survey concerning the current situation in the air transport sector.
3. A survey of problems and challenges in the airport sector.
4. Information gathering and a survey concerning standards relating to airport facilities.
5. Surveys of Port Moresby Airport, Tokua Airport and Lae Nadzab Airport.

3. The Survey Process

3-1 Members of the Survey Team

NO	Name	Assignment	Affiliation	Duration of Stay
1	Koichi Miyake	Administrator	Executive technical advisor Economic Infrastructure Development Division, JICA	August 1 – 4, 2010
2	Kazuya Hiraguri	Planning & Coordination	Assistant Director Planning and Coordination Division Economic Infrastructure Development Division, JICA	August 1 – 4, 2010
3	Junji Yasui	Road & Bridge Plan	Advisor International Division Chodai Co., Ltd.	April 10 – May 19, 2010 August 1 – 4, 2010
4	Akira Koyama	Port Plan	Advisor Overseas Coastal Area Development Institute of Japan	April 17 – May 1, 2010 August 1 – 4, 2010
5	Takehiro Yoshida	Airport Plan	Airport Engineer Ports/Airports Group Transportation Department Nippon Koei Co., Ltd.	April 17 – May 1, 2010 2010 August 1 - 4

3-2 Survey Process

(1) Survey process

Survey Aspect	April	May	June	July	August
Advance preparation	□				
Local survey (roads & bridges)	■	■			
Local survey (ports)	■				
Local survey (airports)	■				
Survey report			□		
Local reports					■
Final report (August)					□

(2) Survey timetable (first survey)

No.	Date	Junji Yasui	Takehiro Yoshida	Akira Koyama
1	Apr 10 (Sat)	Travel to PNG		
2	Apr 11 (Sun)			
3	Apr 12 (Mon)	Courtesy visits to JICA, DNPM, DOW/PTB		
4	Apr 13 (Tues)	Meeting with DOW/PTB		
5	Apr 14 (Wed)	Meeting with DOW・PTB		
6	Apr 15 (Thurs)	Meeting with DOT		
7	Apr 16 (Fri)	Meeting with ADB		
8	Apr 17 (Sat)	Field survey at Kupiano	Travel to PNG	
9	Apr 18 (Sun)	Meeting of survey team members		
10	Apr 19 (Mon)	Meeting with DNPM, DOT, AusAID, ADB		
11	Apr 20 (Tues)	Meeting with DOT, DOW,	Meeting with DOT, CAA	DOT Maritime Transport
12	Apr 21 (Wed)	Travel to Lae	Meeting with Air Niugini	Information gathering at PNG PCL
13	Apr 22 (Thurs)	Field survey at Lae	Meeting with CAA, field survey	Meeting with ICCC
14	Apr 23 (Fri)	Field survey of Wau roads	Meeting with ADB	Information gathering at the shipping companies
15	Apr 24 (Sat)	Information gathering at Lae	Travel to Rabaul	
16	Apr 25 (Sun)	Information gathering	Field survey at Rabaul	
17	Apr 26 (Mon)	Travel to Goroka, information gathering	Airport information gathering at CAA Tokua	Information gathering at PNG PCL Rabaul
18	Apr 27 (Tues)	Travel to Mt Hagen, information gathering	Travel to Lae	
19	Apr 28 (Wed)	Field survey at Mt Hagen	Airport information gathering at CAA Nadzab	Information gathering at PNG PCL Lae
20	Apr 29 (Thurs)	Travel to POM	Travel to POM	
21	Apr 30 (Fri)	Discussions among team members, report to JICA		
22	May 1 (Sat)	Sorting of information	Return to Japan	
23	May 2 (Sun)	Travel to Kimbe		
24	May 3 (Mon)	Information gathering at Kimbe		
25	May 4 (Tues)	Information gathering at Kimbe		
26	May 5	Travel to POM		

	(Wed)		
27	May 6 (Thurs)	Field survey at Malalua	
28	May 7 (Fri)	Field survey at Tapini	
29	May 8 (Sat)	Sorting of information	
30	May 9 (Sun)	Sorting of information	
31	May 10 (Mon)	Sorting of information	
32	May 11 (Tues)	Report to JICA	
33	May 12 (Wed)	Meeting with DNPM, DOW	
34	May 13 (Thurs)	Report to DOW, ADB	
35	May 14 (Fri)	Report to DNPM, AusAID	
36	May 15 (Sat)	Written report	
37	May 16 (Sun)	Written report	
38	May 17 (Mon)	Meeting with NRA	
39	May 18 (Tues)	Report to DNPM, JICA, EOJ	
40	May 19 (Wed)	Return to Japan	

Survey timetable (second survey)

No.	Date	Koichi Miyake	Kazuya Hiraguri	Junji Yasui	Takehiro Yoshida	Akira Koyama
1	Jul 31 (Sat)	Transfer				
2	Aug 1 (Sun)	Arrival				
3	Aug 2 (Mon)	Courtesy visits to JICA, PNG Port, DNPM, DOW/PTB				
4	Aug 3 (Tues)	Briefing session held, meetings with NAC・ADB				
5	Aug 4 (Wed)	Report to the Embassy, return to Japan				

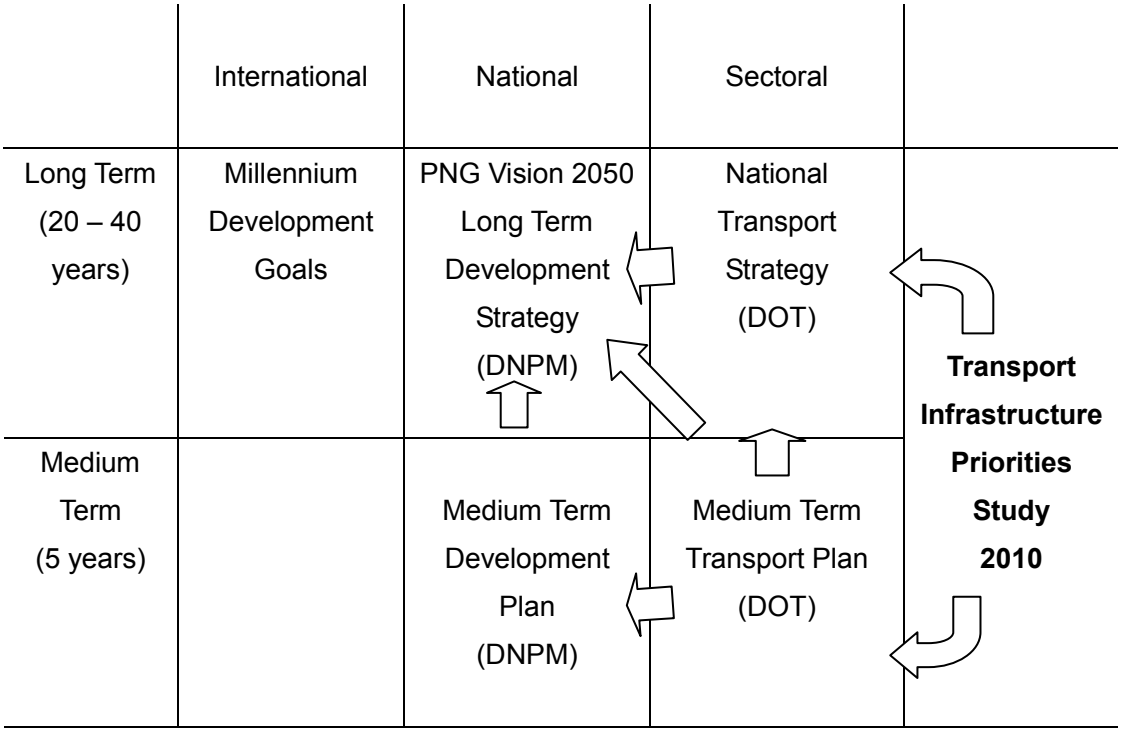
Legend: POM: Port Moresby, EOJ: Embassy of Japan, DOW: Department of Work
DNPM: Department of National Planning and Monitoring
PNG-PCL: PNG Ports Corporation Limited, NRA: National Road Authority
ICCC: Independent Consumer & Competition Commission
CAA: The Civil Aviation Authority
PTB：Plant and Transport Branch

4. The Background to the Transport Sector Survey

4.1 Transport Infrastructure Priority Study 2010

At present, amidst a situation in which there are a great many infrastructure development plans despite a limited budget, the PNG government is conducting a survey to make strategic decisions about the order of priorities. In TIPS2010, with the support of the ADB, AusAID, the EU, Japan and the World Bank, the Department of Transport has been instrumental in establishing four working groups, focusing on the road transport sector, the water transport sector, the air transport sector and the rural transport sector. The final report is due to be completed in mid-November 2010. The compilation of the report has been subcontracted to KPMG Advisory. Table 1 shows the positioning of TIPS2010 in the overall plan.

Table 1 The Positioning of TIPS2010



4.2 PNG National Budget

1) Income

Table 2 Income

(Unit: Million Kina)

		2006	2007	2008	2009	2010
		Actual	Actual	Actual	Revised	Projection
Tax	**Tax on Income**	**3823.5**	**4491.3**	**4352.6**	**3339.4**	**4029,7**
	Dom. Taxes	**784.3**	**958.5**	**992.7**	**1102.4**	**1258,9**
	Taxes on International Trade	**337**	**404.2**	**410.8**	**386.8**	**446,7**
	(Subtotal)	**4944.8**	**5854**	**5756.1**	**4828.6**	**5735,3**
Non-Tax		**428.8**	**433**	**282,6**	**739,0**	**400,5**
Infrastructure Tax Credits		**23.3**	**20.6**	**32,6**	**40,0**	**60,0**
Grants	AusAid		736	833.6	731,9	881,3
	JICA		43.8	212.8	34,8	47,3
	European Union (EU)		120.6	29.8	139,2	164,2
	New Zealand		35.7	51.9	44,1	52,1
	China			51.9	40,0	31,1
	United Nations (UN)		25.9	33.7	35,9	83,5
	Others		54.1	31.6	6,2	34,4
	(Subtotal)	**914.6**		**1002,0**	**1032,1**	**1293,9**
REVENUE TOTAL		**6311.6**	**7028.6**	**7780.4**	**6639,7**	**7489,7**

2) Expenditure

The government is aware of the importance of implementing a development budget; it is monitoring and evaluating each project and program, and has accepted accountability and the need for transparency in the development budget. It has implemented personnel changes in central government ministry staff, above all in the DNPM, and in 2010 it has strengthened reporting on development expenditure, in order to ensure that the expenditure budget is as effective as possible. The funds promised by the government total 733 million kina. Government expenditure in major sectors is shown in Table 3.

Table 3 Government Expenditure in Major Sectors

(Unit: Million Kina)

Sector	Name	Amount
Rural budget	Rural Electricity Program	40
	Rural Roads Program	40
	District Treasury Roll-Out Program	40

	Strategic District Markets Program	20
	Rural Lock-up Program	10
	Coastal Fisheries Project	20
	Large Plantation Rehabilitation Program	26
Transport	National Bridges Maintenance Program	50
	National Roads Maintenance Program	30
	Road Maintenance, Up-grading Project in Highland Provinces	42.5
	Highlands Road Maintenance Project	49.3
	Highlands Region Roads Improvement Investment Program	22
	Baiyer Madan road development	20
	Bogia Angoram Road development	20
	Coastal shipping transportation program	50
Urban development and improvement	Lae City Roads Rehabilitation	20
	Hagen City Roads Rehabilitation	10
	Rehabilitation of Goroka Town Roads	5
	Rehabilitation of Madang Town Roads	5
	Rehabilitation of Oro Province Roads	10
Social development	HIV/AIDS	9.6
	Social Development	35
	Capacity development of Social service	13.3
	UBSA (Umbrella Benefit Sharing Agreement)	185

4.3 Government Institutions Relating to Transport Infrastructure

1) Department of National Planning and Monitoring

The DNPM has jurisdiction over the formulation and implementation of national development plans and the creation of the development budget, as well as being responsible for budget allocation and acting as the point of contact for matters regarding support from aid organizations. With regard to the main organizational structure of the DNPM, it consists of four sections: 1) the Public Investment Program (PIP) Wing; 2) the Policy Wing; 3) the Project Audit and Evaluation Section; and 4) the Corporate Service Section.

2) Organizations relating to transport

The ministries and agencies relating to transport are the Department of Transport (DOT), the Department of Work (DOW) and the Office of Civil Aviation, which are under the command of the Minister of Works, Transport and Civil Aviation.

1. Department of Transport (DOT)

This body is in charge of enacting laws pertaining to land, sea and air transport, formulating implementing policies, maintaining and operating flight equipment, and providing support for various committees relating to transport, such as the Land Transport Committee and the Coastal Trade Committee. The National Land Transport Board (NLTB) deals with such matters as driving licenses, car safety inspections, permits for heavy goods vehicles that cross provincial borders, taxi permits, and permits registering the sale of cars. The Land Transportation Division (LTD) carries out departmental coordination. For example, each province is in charge of registering all vehicles within its jurisdiction, and the LTD compiles this data on a national level. However, the collation of data lags behind considerably. In addition, this ministry takes the lead in putting together the National Transport Development Plan (NTDP).

2. Department of Work

The DOW is the organization that implements financial investment plans, in particular the road network development plan, and provides technological support for road maintenance and the formulation of national budgets. Amidst this situation, the National Road Authority (NRA) is seeking to branch out into such areas as running the maintenance of national highways throughout the country, including the maintenance of part of the Highland Highway. Moreover, the Plant and Transport Branch (PTB), which is under the control of the DOW, is primarily a division that manages equipment for maintaining roads, and lends the equipment that it owns to public institutions as requested.

3. National Road Authority (NRA)

This organization, which is mainly in charge of road maintenance, has a deep relationship with the DOW in carrying out its duties, but it is financially independent from the DOW. At present, the DOW also deals with road maintenance, but the DOW conducts maintenance using technicians and workers that it employs using funds from the government, while the NRA carries out its duties on the basis of contracts with the private businesses that actually carry out the maintenance. As maintenance activities by the DOW are not going well, AusAID and the ADB have high hopes about road maintenance conducted by private businesses on the basis of long-term contracts with the NRA. However, in road maintenance on a contract basis, there is the issue of whether the contractors can deal with problems that go beyond the scope of the contract, such as maintenance work on damaged roads and urgent disaster prevention work. The sources of finance for the NRA include taxes that place a burden on road users (a low-rate fuel tax), and project-type financial support from the ADB,

AusAID and the WB. The table below shows the fiscal expenditure plan of the NRA.

Revenue Source	Kina (million) by Year				
	2010	2011	2012	2013	2014
NRA Administration					
• Estimated Personnel Emolument	2.67	2.67	2.67	2.67	2.67
• Estimated Goods and Services	1.33	1.33	1.33	1.33	1.33
• Govt. recurrent budget required	**4.01**	4.01	4.01	4.01	4.01
NRA Maintenance					
• Estimated NRA NRM Expenditure	78.5	92.4	93.2	93.2	93.2
• ADB MFF Loan Financing	23.0	44.6	44.8	33.1	33.1
Total Maintenance Expenditures	**101.5**	137.0	138.0	126.3	126.3
Sources of Funding					
• Road Fund Accumulation	9.0				
• RUC (Diesel Fuel Levy)	16.0	24.0	24.0	24.0	24.0
• RUC (Fuel Petrol Levy)	0.0	0.0	0.0	0.0	0.0
• Road Damage Charge	10.0	10.0	10.0	10.0	10.0
• Vehicle Registration	15.0	20.0	20.0	20.0	25.0
• Tax Credits	10.0	10.0	10.0	10.0	10.0
Sub-Total	60.0	64.0	64.0	69.0	69.0
Govt. Development Budget Required (includes ADB MFF counterpart funding)	**18.5**	28.4	29.2	29.2	24.2

4.4 Major Policies in PNG

(1) Long-term Development Strategy (LTDS) 2010 – 2030

The LTDS 2010 – 2030 provides an overview of what should be achieved over the 20 years from 2010 to 2030. It focuses on the development of PNG over the course of 20 years, setting forth clear goals and measurable targets; it also details the Medium-term Development Strategy (MTDS), which contains four five-year plans for realizing the LTDS. The development plans of provincial and regional governments, as well as third-party government institutions, are planned in line with the MTDS; moreover, with regard to budget-related policy, annual development budgets are determined for each ministry, province and sector on the basis of the Medium-term Resource Framework (MTRF), which in turn is based on the MTDS.

(2) Medium-term Development Strategy (MTDS) 2005 – 2010

The MTDS 2005 – 2010, which was formulated with the aim of reconstructing

and developing the economy and society, was adopted by the national parliament in November 2004. The allocation of budget funding is focused in particular on the following priority development areas:

1. Good governance
2. Export-led economic growth
3. Development of rural villages, poverty reduction and human resource development

(3) Medium-term Resource Framework (MTRF)

The MTRF is designed to run for three years, from 2007 to 2009; it is a framework in which the PNG government and its development partners engage in discussions to determine the target levels for development expenditure, bearing in mind the priority expenditure fields set forth in the MTDS, and allocates funding to priority fields effectively. Firstly, the ceiling for each priority field is set, then the total amount of funding available is calculated from the PNG government's own development funding and operating expenses, plus donations and loans from development partners; funding sources are managed by means of the framework thus constructed. The target to 2012 is to spend 55.5% of the PNG government's budget and 89.9% of the development budget on the priority fields in the MTDS.

4.5 The PNG National Budget

(1) Economic Growth 2006 – 2009

The economy of PNG has demonstrated its highest-ever growth rate in the last ten years and remains strong thanks to a combination of market prices resulting from proactive international development assistance from various donors, improved economic stability, careful macroeconomic and fiscal policy, and low interest rates and inflation.

In 2006, GDP from non-mining industry remained at 3.9%, but real GDP growth slowed, falling to 2.6%. This was due to the impact of a decline in agricultural produce, as well as a temporary suspension of oil exports. In 2007, the economy recovered, with real GDP reaching 7.2% and non-mining industry GDP increasing to 8.1%, thanks to the revitalization of mining products, a good seasonal situation, high market prices and sound growth in the non-mining sector. The increase in real GDP up to 2007 tended to exceed the population growth rate, which has cultivated incremental improvements in the standard of living of the PNG populace.

Principal Economic Indicators

	2004 Act	2005 Act	2006 Act	2007 Act	2008 Act	2009 Est
Real GDP Growth (%)	2.7	3.4	2.3	7.2	6.7	4.5
Real Non-Mining GDP Growth (%)	3.1	3.1	3.9	8.1	7.6	5.2
Employment Growth (%)	0.7	1.7	8.6	9.7	6.7	3.9
Inflation (annual average) (%)	2.1	1.7	2.4	0.9	10.6	7.4
Treasury Bill Rate (%)	9.0	4.5	5.0	5.0	5.9	8.0
3 year Inscribed Stock Yield (%)			6.0	5.7	7.6	8.2
World Economic Growth (%)	5.3	4.8	5.4	5.2		
Oil Price (US$ per barrel)	42.1	53.4	64.0	71.0	97.0	57.0
Copper Price (US$/ton)			6,7313	7,126	6,963	4,659
Gold (US$/oz)		444.9	604.3	697.0	881.0	930.0

(2) Fiscal 2008 Budget

It was anticipated that there would be further growth in 2008, supported by the strong global economy, increasing domestic produce, strong consumption trends and political stability; inflation was low and a policy on inflation control was adopted. The interest rate was low and the exchange rate remained stable, continuing the trend towards a “strong kina”. With regard to the PNG economy, it was forecasted that real GDP would be 7.2% again in 2008. As a result of an increase in the record market price in recent years, government revenue has demonstrated substantive growth.

The annual average inflation rate forecast for 2008 was 10.7%; this increase stems from a strong money supply, increased fiduciary loans, the revitalization of trade, the expansion of the private sector and growth in government expenditure. It is also partially due to a deterioration resulting from soaring prices for energy and food, which have been brought about by rises in the prices of such major consumer staples as rice, fuel and flour.

National Government Budget 2005-2009 (Kina: Million)

	2005 Act	2006 Act	2007 Act	2008 Act	2009 Est
Total Revenue & Grants	5326.8	6311.6	7028.6	7073.3	6639.6
Total Expenditure & Net Lending	5319.1	5775.8	6552.4	7551.8	6725.6
Budget Balance	7.7	535.8	476.2	-478.5	-86.0

(3) 2009 Budget

From the latter half of 2008, the world economy experienced a precipitous

decline, plunging into the most severe economic situation it had seen since the Great Depression in the 1930s; this had an impact on PNG in 2009. The deteriorating economic outlook led to domestic economic growth falling from 6.7% in 2008 to 4.5% in 2009. This slump mainly resulted from the fall in consumer prices. Due to the economic decline that occurred in 2008, it was forecast that inflation would diminish in 2009, so strong inflation-control measures were formulated for the domestic economy in response to this.

(4) Development Budget

In recent years, the proportion of the development budget accounted for by donor expenditure has been declining, but it rose once more in 2008. The budget structure is 40% expenditure by the PNG government to 60% aid expenditure from donors.

The proportion of expenditure on priority development areas (MTDS) is shown in the table below.

(Kina: Million)

	Total	MTDS (%)	MTDS	Non-MTDS
2006	693	86.3	598	95
2007	757	88.5	670	87
2008	763	82.7	630	133
2009	1621	73.6	1193	428
Average	1090	78.6	857	233

(5) Provincial Government and Regional Development Budgets

In PNG, which has adopted a system of the decentralization of power to local government, the funds that enable regional governments to provide basic government services consist of funds that they have procured themselves and subsidies from the central government. However, the fact is that regional governments have to depend on subsidies from the central government as a source of finance. Under the current system, the governments of each province receive the following grants (Organic Law Grants) from the central government.

1. Block Grant (funding for the operation of provincial governments)
2. Health Function Grant (funding for the provision of medical services)
3. Education Function Grant (funding for the provision of education services)
4. Transport Function Grant (funding for the provision of transport services)

5. Derivation Grant (funding for the revitalization of economic activity within the province)
6. Town Services Grant (funding for the operation of local-level government (LLG) in towns)
7. Rural LLG Grant (funding for the operation of LLG)

4.6 The Status of Other Development Donors in PNG

(1) Aid Framework

Following the signing of the Paris Declaration on Aid Effectiveness in March 2005, improving the effectiveness of aid was taken up as a major topic for discussion at the Madang Forum held with development partners in Goroka, Eastern Highlands Province in 2005, and Madang, Madang Province in October 2006. The degree to which the guidelines agreed in the Paris Declaration applied to the context of PNG was acknowledged, with the points relating to their implementation by the PNG government and related donor organizations being confirmed as the Madang Action Plan. Based on the Paris Declaration, it is necessary to strive to strengthen the aid management ability of the government, in order to make development aid for PNG more efficient, so the government is planning and implementing the reinforcement of the legal system, the increase of the budget allocations required to manage aid, the securing of personnel, the formulation of strategies and plans, the institutionalization of dialogues with development partners, and the construction of aid information management systems.

(2) Development Donors

Donors to PNG include Australia (AusAID), New Zealand (NZAID), China, the EU, the Asian Development Bank (ADB), the World Bank (WB) and the United Nations (UN). Of these, Australia, the ADB, the WB and the UN revised their respective project plans for the country in line with the MTDS 2005 – 2010 formulated by the PNG government, and have been implementing strategic project deployment. The main donors in PNG (AusAID, the EU, the WB and the ADB) are emphasizing “the strengthening of governance”. This is because aid projects so far have not yielded great results, which is believed to be due to the fact that there has been no recognition of the lack of government functions at the central and regional government levels. Accordingly, the number of donors emphasizing initiatives in the field of “public administrative management” and “public expenditure management” is growing. In addition, many donors have listed infrastructure development as a priority aid sector. Moreover, the number of donors that have added HIV/AIDS as a priority aid sector in PNG has been increasing in recent years.

1) AusAID

Australia, which is the biggest donor country for PNG, is implementing many aid programs with the following four final goals, based on the Papua New Guinea – Australia Development Cooperation Strategy 2006 – 2010.

i) Improved Governance and National Building
ii) Sustainable Broad-Based Economic Growth and Increased Productivity
iii) Improved Service Delivery and Stability
iv) Strengthened, Coordinated, and Effective Response to the HIV/AIDS Epidemic

AusAID has encouraged the PNG government to improve aid effectiveness and construct aid monitoring systems through funding in the form of “performance grants”. Furthermore, on 20 August 2008, the prime ministers of both countries signed the Partnership for Development between the Government of Australia and the Government of Papua New Guinea, which seeks in particular to reduce poverty and promote the achievement of the Millennium Development Goals (MDGs). There are many projects relating to “improved governance” and “the stabilization and qualitative improvement of public services”, which have been proposed by AusAID, and the next areas that will be targeted are “the expansion of sustainable economic growth and productivity” and “HIV/AIDS”.

2) NZAID

Based on the Papua New Guinea Country Programme Strategy 2008 – 2018, New Zealand has emphasized two points in particular: the provision of high-quality health maintenance and education services and improved access to these, and improved access to better standards of living. One of the characteristics of NZAID is that, as well as clearly formulating strategies focused on the regional deployment of projects, it actively promotes cooperation with other donors. Examples of these include the provision of financial aid for the Smallholder Support Services Pilot Project (SSSPP), undertaken in partnership with the ADB, as well as the World Bank’s Rural Livelihoods Program, and AusAID’s Provincial Performance Improvement Initiative. Moreover, another characteristic is that the value of support for the Autonomous Region of Bougainville accounts for almost 40% of the aid provided.

3) China

China’s aid has the following three characteristics:

1. The local ambassador or high-ranking official makes swift decisions and

takes action quickly, determining aid on the basis of their political judgment at that particular moment.

2. There are many donations of large buildings that are easily noticeable, such as government buildings and sports facilities.
3. Most of the materials, equipment and workers required for aid relating to buildings and construction work are brought in from China, with the finished item being donated to the recipient country.

China's policy is positioned amidst a national strategy of securing resources, energy and foodstuffs. In many cases, the formation of proposals for projects that might benefit from Chinese aid is determined between politicians and foreign ministry officials; thereafter, only administrative procedures are passed on by politicians and foreign ministry officials for the DNPM to complete. The DNPM is not only the point of contact for donors concerning aid, but is also the ministry responsible for development plans and the management of their implementation, but it is rarely involved in matters relating to aid from China and there is a tendency for highly politically-charged projects to be constructed. To be more specific, such projects include the construction of an international conference center using a loan from China, a road project in the Ramu nickel mining area, in which a Chinese mining company has an interest, not to mention sports facilities in and around the capital, the Wewak sports stadium and the Pacific Marine Industrial Zone project (PMIZ). The PMIZ focuses on enhancing the development of basic infrastructure on the outskirts of Madang, and developing its functions as a port for exports of resources from PNG.

4) South Korea

Aid from South Korea takes the form of a single project: a loan-financed project focused on installing a drainage system as a means of alleviating the impact of heavy rains in the city of Wewak, in East Sepik Province. Moreover, in 2009, South Korea donated five vehicles to the PNG foreign ministry.

5) EU

Based on the PNG – European Community, Country Strategy Paper and National Indicative Program for the period 2008-2013, the EU is implementing programs focused on ensuring gender equality and increasing income opportunities in rural areas, with the aim of developing the regional economies. Moreover, in the field of human resource development, it is undertaking high-quality basic education and vocational training, aimed at young people in provincial areas in particular.

6) ADB

The ADB Country Strategy 2006 – 2010 emphasizes economic development, the improvement of public services and public fiscal management. In many cases, after “technical assistance to prepare for the project”, support is linked to loans for implanting the project; there has been a particularly remarkable increase in the number of ADB projects since 2008. “Improved governance” has been positioned as being essential to the development of PNG through loans and technical assistance (T/A), so the ADB is continuing to work on public fiscal management. The ADB has prescribed “public fiscal management”, “private sector development”, “transport infrastructure”, and “healthcare and HIV/AIDS” as priority aid sectors; in particular, as well as providing aid to the transport and communications sector, one can see that the ADB has been proactive in the formation of projects using T/A, focused on the social and industrial sectors. The following table provides a list showing the increase in the number of ADB projects.

ADB Projects by Form of Aid

	2009	2008	2007
LOANS	10	9	3
TECHNICAL ASSISTANCE （T/A）	19	11	2
GRANTS	2	1	1
PRIVATE SECTOR	1	0	0
TOTAL	32	21	6

7) UN

UN organizations active in PNG include the UNDP, UNICEF, UNFPA, UNHCR and UNIFEM. Of the 17 projects currently underway, there has been a specialization in assistance for two sectors in particular: administrative organization (seven projects) and the social sector (nine projects). The vision of UN organizations for aid projects in PNG is stated to be “capacity building relating to the formation of the state”, with priority aid sectors listed as good governance, human resource development, a sustainable lifestyle, gender, and HIV/AIDS.

(3) Support From Japan

1. The PALM 5 Summit

In May 2009, the Fifth Pacific Alliance Leaders Meeting (PALM 5) took place in

Hokkaido; under the slogan “We are islanders – an eco-friendly, rich Pacific”, regional issues were discussed, including problems relating to the environment and climate change. It was announced that aid worth 50 billion yen would be provided over the next three years. This declaration is positioned as the guideline for Japanese aid to Oceania over the next three years. Aid to PNG will be provided on the basis of Japan’s plan for aid in PNG and the national aid strategy of PNG, focusing on the three pillars of “environment and climate change”, “human security” and “people-to-people exchange”, which in turn is based on the aforementioned declaration.

5. The Land Transport Sector

5.1 Local Survey

5.1.1 Main Objectives of the Survey

1. To conduct a survey of the direction of the development of transport infrastructure in PNG, including the following two points:
    a) Verifying the PNG National Transport Development Plan.
    b) Checking developments among aid organizations involved in PNG.
2. To conduct field surveys in order to gain an understanding of problems affecting major roads and the state of their maintenance.
3. To conduct field surveys in order to check what maintenance activities are conducted by the Department of Work (DOW) Plant and Transport Branch (PTB).
4. To compile a report on what kind of cooperation is required in order to carry out road improvements in PNG.

5.1.2 Local Survey

In the local survey, studies were made of the roads shown below, which are the focus of attention in PNG. It does not cover all main roads in PNG; the roads to be studied were selected on the basis of the following criteria:

1. Part of the economic corridor announced by the PNG government in 2010.
2. Roads relating to the Trans-Island Highway, the completion of which is the long-cherished wish of the PNG government.
3. Roads relating to the development of liquefied natural gas (LNG), which has intensified recently.
4. Roads that the PNG government specially requested be surveyed.

The important routes that fall outside the scope of these criteria are the missing links between Lae and Madang, and Madang and Wewak; unfortunately, it was not possible to include them in this survey.

Table 1 Roads Surveyed

No	Route	Outline
1	Port Moresby - Kupiano	Route that forms part of the economic corridor linking the Coral Sea and the Solomon Sea
2	Port Moresby - Malalaua	Route that forms part of the Trans-Island Highway linking Lae and Port Moresby, as well as part of the Gulf route used for natural gas development in the Highlands
3	Port Moresby - Tapini	Route that forms part of the Trans-Island Highway linking Lae and Port Moresby
4	Lae - Wau	Route that forms part of the Trans-Island Highway linking Lae and Port Moresby
5	Lae - Mt. Hagen	Highland trunk road with the most intensive economic activity in PNG. This is a region where aid from various aid organizations is concentrated
6	Kimbe - Bialla	Regional trunk road where economic revitalization has been taking place through oil palm development. Route that forma part of the trunk road linking Rabaul and Kimbe

5.2 Selection of Priority Projects

5.2.1 Projects Evaluated

As a result of the survey, it was ascertained that among these routes, 1. Port Moresby – Kupiano has no major problems for the time being, as the World Bank is in charge of maintaining the bridges and roads on this route. 3. Port Moresby – Tapini and 4. Lae – Wau have the potential to become part of the route linking up the future Trans-Island Highway, but the actual route of this highway has not yet been confirmed, so at present they are no more than access roads to small provincial cities. Accordingly, as there is little potential for Japan to be involved in the near future, these were removed from the routes being considered and consideration was given only to the following three routes. As organizations such as the ADB, AusAID and the WB are already involved in the maintenance of the roads themselves, there is little scope for Japan to become involved, so the survey team focused on the bridges, in whose maintenance none of the aid organizations are involved and which are vital to ensuring safe road transport.

(1) Port Moresby – Malalaua (Hietano Highway)

Four routes are currently strong candidates for the Trans-Island Highway

linking Lae and Port Moresby, and all of the proposed routes link up with this route at some point. Moreover, due to the development of natural gas, a road linking the Highland region with the Gulf is planned; consequently, a Gulf road linking up with Malalaua is also planned. Moreover, a road is being constructed between Berena and Malalaua with a loan from Japan. The road in this sector is maintained by the ADB and AusAID, but consideration was given to it because the Angabanga Bridge is a temporary bridge and it needs to be repaired or replaced because it lacks the capacity to bear heavy loads, such as trucks, and there is severe damage to the deck of the bridge.

Photograph 1 Full View of the Angabanga Bridge Photograph 2 Damage to the Bridge Deck

(2) Lae – Mt. Hagen (Highland Highway)

The Highland Highway is mainly maintained by AusAID, while the ADB is mainly responsible for the maintenance and development of roads leading off the trunk road, linking up with rural settlements. Most of the bridges on this route were constructed in the 1960s, but have only one lane and have become unable to deal with the actual loads involved now that transport has become containerized. Consequently, in order to adapt to modern transport, bridges have been constructed in three locations with aid from Japan, replacing the bridges from Lae in order. Following this, it was agreed to construct bridges in a further 12 locations, with five bridges being constructed in the first phase and seven in the second phase. However, during the first phase when the five bridges were being replaced, local residents carried out various acts of sabotage, and construction on the proposed second phase of seven bridges has ceased. In this survey, the situation was investigated once more, from the

perspective of the current Highland Highway as a whole, as well as the relationship with the national road development plan. If we look at the situation solely from the perspective of the bridges, while the roads have two lanes to cope with the volume of traffic, which continues to increase, the existing bridges have only a single lane; moreover, they were designed a long time ago and although one could not say that they constitute an immediate danger, they do not meet load-bearing ability standards, so the necessity of building new bridges is indisputable. However, looking at the situation from the perspective of securing traffic on the Highland Highway as a whole, based on the results of the survey, the most important task is deemed to be ensuring the safety of vehicles in the event of blockages caused by the landslides and slope failures that occur on an almost daily basis; at present, as long as there is no danger of collapse, bridges that do not currently represent a bottleneck to traffic would be the priority for the second phase. On this sector of the route, only Dirtywater Bridge (see Photographs 3 and 4) was deemed to be high up the list of priorities for rebuilding, as cargo on a large trailer collided with part of the superstructure, leaving the bridge in a very dangerous condition; accordingly, it became the focus of deliberations concerning rebuilding.

Photograph 3　Dirtywater Bridge (1)

Photograph 4　Dirtywater Bridge (2)

(3) Kimbe – Bialla

This is part of the Kimbe – Rabaul road, which has not yet been fully linked up. AusAID is in charge of maintenance along the entire route. In January 2010, this route became a problem, when small and medium-sized bridges were washed away by floods and the region was cut off. The route was developed as a route to palm plantations and for transporting timber, and the bridges were constructed in the 1980s by a Japanese bridge-building company. Currently, this area is being extensively developed as an oil palm plantation, and, as a

regional trunk road, the volume of traffic is second only to the Highland Highway. There are many problems with the bridges on this route, so the survey team received a request from the PNG authorities to carry out a survey of the route. Based on the results of the survey, it was determined that an evaluation of the load-bearing capacity, repair work and replacement was required for the following bridges. In addition, culverts have sustained major damage, so there are places where passage is difficult when there are floods; consultation with AusAID will likely be needed regarding the division of labor in relation to this.

Table 2 Bridges Between Kimbe and Biala

No	Bridge Name	Length (m)	Form	Application
1	Koh	25	Bailey	Bridge collapsed in 2008 due to a truck carrying oil palms. Between Hoskins and Kimbe.
2	Aum	49	Truss	A Japanese bridge was manufactured and constructed in 1983. Stetie Bay Lumber Company. The road attached to the bridge has sharp curves, so a crash occurred. Bridge components were damaged. It is currently not used. Repair is possible. S05'40.336’ E150`26.559
3	Kapiura	116	Ranger	A Japanese bridge was manufactured and constructed in 1984. Stetie Bay Lumber Company. Vertical hangers and the brackets linking the beams have been fractured. Temporary repairs have been carried out. It is necessary to inspect the load-bearing capacity of the bridge and make a decision about whether or not it needs to be reinforced. S05`41.353 E150`26.737
4	Koriri	27	Bailey	Blocked when there are floods during the rainy season. It is currently a wooden bridge. A new bridge is required. S05`39.643 E150`35.926
5	Upai	25	Bailey	Submerged when there are floods during the rainy season, which means that it is blocked to traffic. A new bridge is required. S05`38.847 E150`38.977
6	Bilomi	49	Truss	There are no problems with the body of the bridge. No maintenance has been carried out for 30 years. Maintenance work such as repainting and cleaning is required. S05`36.554 E150`41.964

Photograph 5 Koh Bridge

Photograph 6 Aum Bridge

Photograph 7 Kapiura Bridge

Photograph 8 Koriri Bridge

Photograph 9 Upai Bridge

Photograph 10 Bilomi Bridge

5.2.2 Evaluation of the Priority Level of Each Bridge

(1) The Attributes of the Evaluation

Rather than evaluating the priority level individually on each route, the bridges were evaluated as groups. The Analytic Hierarchy Process (AHP) was used as the

analytical technique. The survey team considered the following aspects in their evaluation.

1. Traffic volume
2. Economic activity in the areas alongside the routes
3. The population that would benefit in the areas alongside the routes
4. Project costs
5. Blockage of traffic in the event of floods
6. Interference by local citizens
7. Evaluation by means of AHP

   Note: AHP gives a significant weighting to evaluation based on the subjective viewpoint of the evaluator; in this case, blockage of traffic in the event of floods and interference by local citizens are weighted heavily, so the priority level of the Kimbe route is high.

Weighting of Evaluation Attributes

Evaluation Attribute	a	b	c	d	e	f	Igen Vector	Weight
a: Traffic volume	1.000	2.000	2.000	3.000	0.333	0.200	0.963	0.128
b: Economic activity	0.500	1.000	1.000	2.000	0.500	0.333	0.742	0.099
c: Nearby population	0.500	1.000	1.000	2.000	0.500	0.333	0.742	0.099
d: Project costs	0.333	0.500	0.500	1.000	0.250	0.200	0.401	0.053
e: Blockage in the rainy season	3.000	2.000	2.000	4.000	1.000	0.200	1.458	0.194
f: Interference by locals	5.000	3.000	3.000	5.000	5.000	1.000	3.225	0.428
							7.531	1.000

Determining the Level of Priority

Route	Evaluation Attribute						Overall Evaluation
	a	b	c	d	e	f	
	0.128	0.099	0.099	0.053	0.194	0.428	
A:	0.117	0.117	0.117	0.540	0.167	0.320	0.235961361

POM-Malalaua							
B: HighLand	0.614	0.614	0.614	0.163	0.167	0.122	0.292838593
C: Kimbe-Bialla	0.268	0.268	0.268	0.297	0.667	0.558	0.471200046

Evaluation Index		
	5	There is a very large gap
	4	There is quite a large gap
	3	There is a gap in comparative terms
	2	There is a slight gap
	1	Same degree

a. Evaluation of Each Sector by Traffic Volume

Evaluation Sector	A	B	C	Igen Vector	Weight
A: POM-Malalaua	1.000	0.250	0.333	0.437	0.117
B: HighLand	4.000	1.000	3.000	2.289	0.614
C: Kimbe-Bialla	3.000	0.333	1.000	1.000	0.268
				3.726	1.000

b. Evaluation of Each Sector by Economic Activity Alongside Each Route

Evaluation Sector	A	B	C	Igen Vector	Weight
A: POM-Malalaua	1.000	0.250	0.333	0.437	0.117
B: HighLand	4.000	1.000	3.000	2.289	0.614
C: Kimbe-Bialla	3.000	0.333	1.000	1.000	0.268
				3.726	1.000

c. Population Alongside Each Route

Evaluation Sector	A	B	C	Igen Vector	Weight
A: POM-Malalaua	1.000	0.250	0.333	0.437	0.117
B: HighLand	4.000	1.000	3.000	2.289	0.614

C: Kimbe-Bialla	3.000	0.333	1.000	1.000	0.268
				3.726	1.000

d. Project Costs

Evaluation Sector	A	B	C	Igen Vector	Weight
A: POM-Malalaua	1.000	3.000	2.000	1.817	0.540
B: HighLand	0.333	1.000	0.500	0.550	0.163
C: Kimbe-Bialla	0.500	2.000	1.000	1.000	0.297
				3.367	1.000

e. Traffic Blockage in the Rainy Season

Evaluation Sector	A	B	C	Igen Vector	Weight
A: POM-Malalaua	1.000	1.000	0.250	0.630	0.167
B: HighLand	1.000	1.000	0.250	0.630	0.167
C: Kimbe-Bialla	4.000	4.000	1.000	2.520	0.667
				3.780	1.000

f. Interference by Local Citizens

Evaluation Sector	A	B	C	Igen Vector	Weight
A: POM-Malalaua	1.000	3.000	0.500	1.145	0.320
B: HighLand	0.333	1.000	0.250	0.437	0.122
C: Kimbe-Bialla	2.000	4.000	1.000	2.000	0.558
				3.582	1.000

5.2.3 Proposals and Observations

1. Judging from the current state of road maintenance in PNG, the upgrading of heavy machinery to maintain the roads is very important. Moreover, it was verified that the upgrading of equipment using trust accounts, which had been a source of concern, is progressing.
2. If the bridges are grouped within the scope of the survey, bridge upgrading in the Kimbe to Bialla sector has a high priority.
3. With regard to the upgrading of bridges along the Highland Highway, it is necessary to replace Dirtywater Bridge as a matter of urgency, but consideration is also needed from the perspective of measures to deal with local citizens and emergency response measures.

At present, AusAID and the ADB are distributing budgets with an emphasis on the maintenance of existing infrastructure. If this pattern continues, PNG will never be able to develop and will be unable to deal with the maintenance costs, which will continue to increase. One of the factors behind the high cost of maintenance in PNG is the fact that the existing road infrastructure is extremely fragile. This is the reason why the cost of maintaining the extremely poor road facilities increases every year, with such issues as areas that should have bridges having only pipe culverts and the failure to use retaining walls to rebuild areas where slopes have collapsed. Moreover, the construction industry, which is essential to road development in PNG, including new development and maintenance, is not very well-developed, making it even more difficult to maintain and upgrade these poor facilities.

One form of aid to PNG that would be unique to Japan could be the development of good road facilities that would not cost a lot to maintain, as well as the cultivation of PNG's own construction industry.

Separately from this survey, a study was carried out concerning road maintenance. PNG is unable to secure the machinery required for road maintenance, which is having a significant impact on the activities of the DOW, PTB. The DOW, PTB has good regional offices, and the technicians deployed there have the skills required to maintain such machinery. Moreover, trust funds are actually functioning and new small road-mending machinery and maintenance tools are being purchased. As a result of this survey, the survey team came to feel that there is an urgent need for heavy equipment in order to carry out road maintenance in PNG.

List of Agencies Visited and Officials Consulted

Participating Agencies	Name	Position
Department of National Planning and Monitoring (DNPM)	Mr. Lawrence Duguman	Assistant Secretary- Bilateral Branch Foreign Division
	Mrs. Jenny Tuman	Senior Aid Coordinator (Japan /New Zealand Desk)
	Mr. Samuel Coney	Assistant Secretary-Multilateral
	Mr. Roland Katak	Acting assistant Director Bilateral Branch Aid policy and Coordination Directrate
	Mr. Michio Serizawa	Project Formulation Advisor
Department of Work (DOW)	Mr. Joel M. Luma	Secretary DOW
	Mr. Roy Harry Mumu	Deputy Secretary (Technical)
	Mr. Eric Sikam	First Assistant Secretary (Technical Services
	Mr. Nelson Lari	First Assistant Secretary
	Mr. Mores M. Igo	Assistant Secretary (MCS)
	Mr. Hans Sarua	Deputy Secretary Technical
	Mr. Ken Saville	First Assistant Secretary (Technical Services)
	Mr. Andrew A. Thavung	Morobe Provincial Works Manager
	Mr. Simeon Suagu	District Manager of DOW Kinbe
	Mr. Paul Balen	Engineer DOW Kimbe
DOW Plant and Transport Branch (PTB)	Mr. Andrew Ralpha Buna	Assistant Secretary
	Mr. Bernard Kull	First Assistant Secretary
Department of Transport (DOT)	Mr. Shella Tukuzu	Secretary
	Mr. Gabi Haoda	First Assistant Secretary
	Mr. Koni Pombo	First Assistant Secretary Plannning and Coodination Division
	Mr. Philip Tek Habon	Deputy Secretary
	Mr. Manfred Ruzsicska	Policy Development Advisor-Aus AID TSSP
	Mr. Manau Suu	Acting Assistant Secretary Shipping Administration

	Mr. Ian Born	Technical Director (ADB Consultant)
AusAID	Mr. William Hilton Thorp	Second Secretary-Transport Infrastructure
	Mr. Patrick Mannix	Road Construction Engineer Advisor (DOW)-TSSP
	Mr. Ian Hayden Smart	Strategic and Business Development Management Advisor- TSSP
	Mr. Philip Warren	Program Director- TSSP
	Mr. Bill Flaherty	Policy and Planning Advisor (DNPM)
National Road Authority (NRA)	Mr. John Belly Kelly Kaio	Planning & Programming Unit Manager
Asian Development Bank	Allan Lee	Deputy Head PNG Resident Mission
	Chales T. Andrews	Country Director PNG Resident Mission
	Hasan Masood	Head, Project Administration Unit Pacific Operation Division
	Douglas Lucius	Transport Specialist PNG Resident Mission
Mapai Transport Ltd	Mr. John Tomcrop	Operation Manager
Mapai Transport Ltd	Mr. Paul Rumbi	Operation Supervisor
Monpi Coffee Export Ltd	Mr. Peter B. Schatz	Managing Director
Trans Wonderland Limited (TWL)	Mr. Keith Hunt	Project Manager
JICA PNG Office	Mr. Kyoji Mizutani	Resident Representative Director
	Mr. Takahiro Yokota	Assistant Resident RepresentativeStaff member
	Mr. Shun Nezaki	Assistant Resident RepresentativeStaff member
	Ms. Hikari Miyahara	Project Formulation AdvisorPlanning and Research Coordinator

6. The Marine Transport Sector

6.1 PNG-PCL (PNG Ports Corporation Limited) and Port-related Organizations

- PNG-PCL is a government-owned organization established in 2006, to take over from its predecessor, PNG Harbour Limited (before which there was the PNG Harbour Board), as part of the policy of privatizing government organizations. It has not yet been fully privatized, and the state (through the Independent Public Business Corporation (IPBC)) is the sole shareholder.
- PNG-PCL is a landowner-type port management company that owns the land where the ports are sited, as well as the basic infrastructure. This land and these facilities are provided to private-sector businesses based on contracts, and the private-sector businesses actually run cargo handling operation.

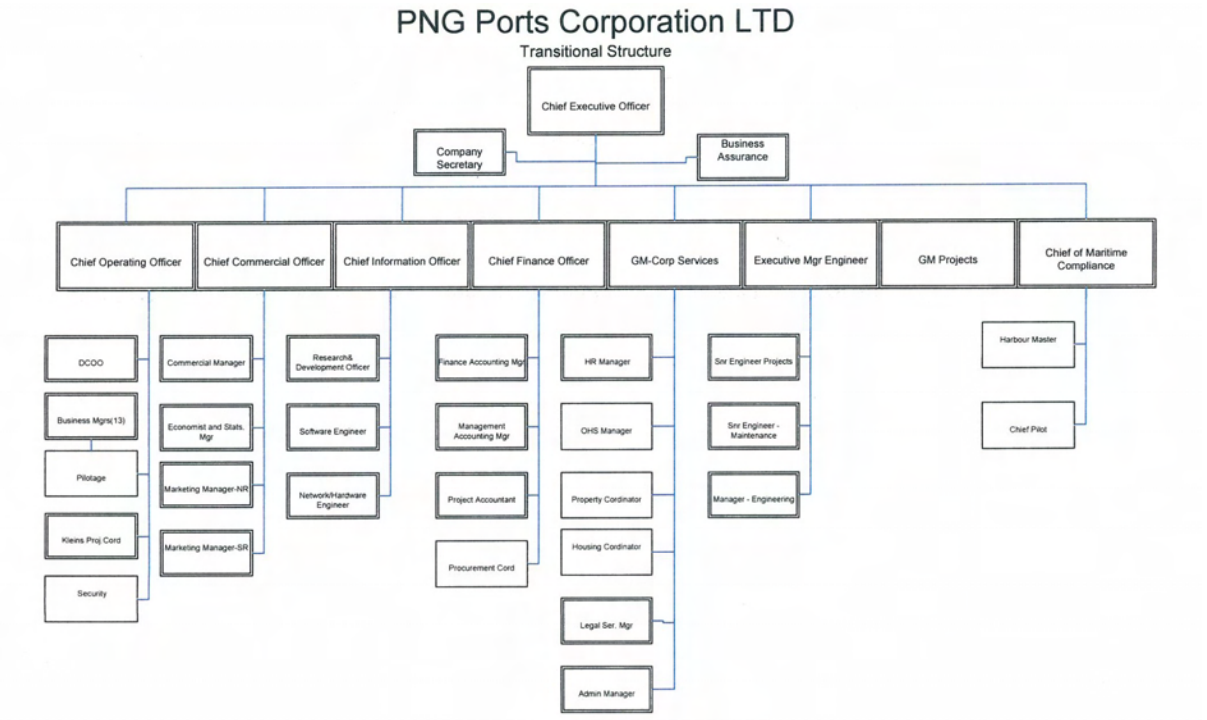


Figure 6.1 The Organizational Structure of PNG-PCL (from August 2009)

- The body with the right to formulate legislation relating to ports is the Department of Transport, but most of the powers of the Department of Transport have been delegated to PNG-PCL.
- There are many government bodies associated with PNG-PCL, including the aforementioned Department of Transport, as well as the National Maritime Safety Agency (NMSA), which deals with the safety of marine transport, the IPBC, which holds shares in public businesses, and the Independent Consumer and Competition Commission (ICCC), which has regulatory

authority over such matters as port fees.

- The existence and activities of PNG-PCL are mainly rooted in two laws. One is the Harbour Act, which provides the foundation for normal port activities; it is also regulated by the Companies Act, from the perspective of having responsibilities to its shareholder as a corporate organization.

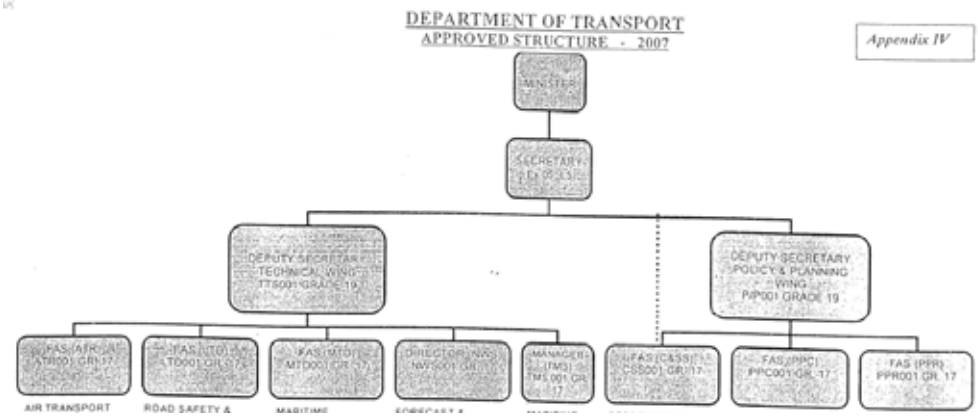


Figure 6.2 The Organizational Structure of the Department of Transport (DOT)

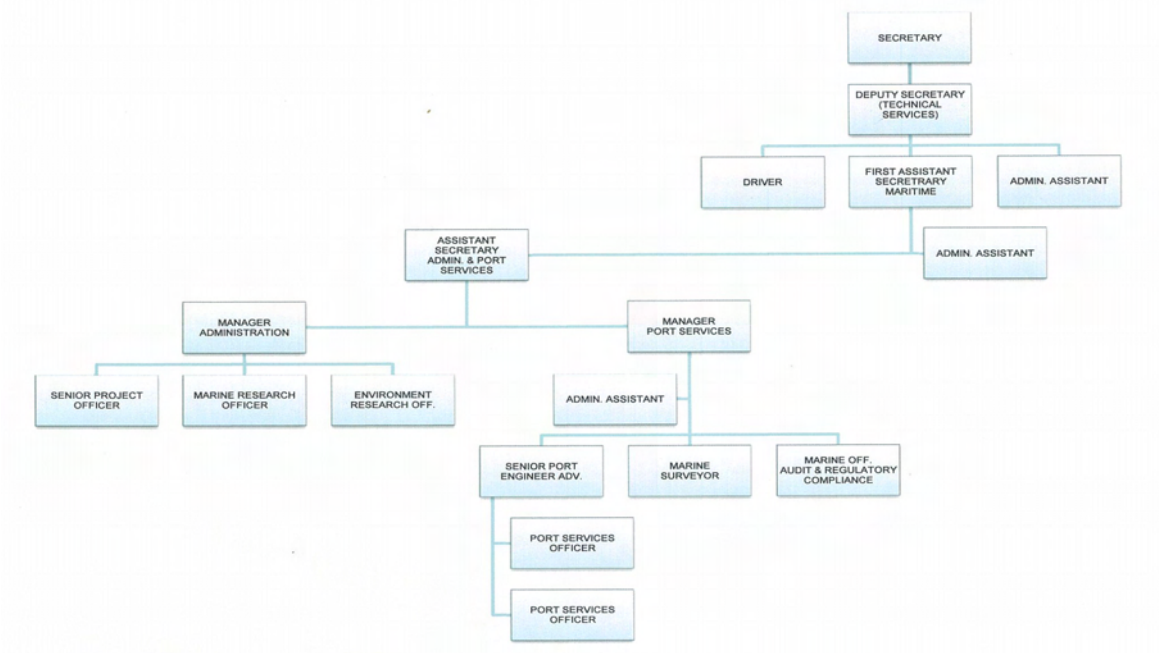


Figure 6.3 The Organizational Structure of the DOT Maritime Transport Division

- PNG-PCL has an obligation to undertake activities and provide services relating to port activities, as well as providing berth reservation services, berthing services, wharfage services, and pilotage, not to mention acting as a mediator for cargo handling services.

- Of these, port fees for berth reservation services, berthing services and wharfage services are regulated by the ICCC. Moreover, the Declared Ports managed by PNG-PCL have a single, uniform port fee structure.
- Of the 23 Declared Ports across the country, PNG-PCL manages 17 and operates 16 (however, the management of Aipata Port and Samarai Port has been outsourced to an agency).

Figure 6.4 The Network of Declared Ports

- Most of the port facilities of PNG-PCL were developed in the 1960s and they cannot handle modern container transport, with the wharves and cargo sheds designed to deal only with conventional cargo.
- Due to a lack of funds over the years since then, it would be hard to say that adequate maintenance activities have been carried out, and as well as the increasingly decrepit nature of the facilities, the lack of facilities that can deal with container cargo means that the cargo handling yards are cramped and PNG-PCL is compelled to operate the ports inefficiently.
- With regard to the income of PNG-PCL between 2005 and 2008, wharfage fees accounted for approximately 45%, berthing fees accounted for approximately 10% and pilotage fees accounted for 13%.
- According to the profit and loss statement, revenue has recovered since 2004 (the data run to 2007), with net profit as a percentage of revenue in 2007 increasing to approximately 38%.

- Through IPBC, PNG-PCL pays taxes to the state, as well as a set proportion as a dividend.
- Of the 16 Declared Ports, income only exceeds expenditure at Lae and POM ports (and sometimes Kimbe is included as well), with the other ports receiving internal subsidies from the revenue of these two (or three) ports.
- This is based on the PNG-PCL measure (policy) of the Community Service Obligation (CSO), which enables remote areas to enjoy a certain level of port services, and the aforementioned uniform national tariff is also based on this policy.
- PNG-PCL is currently putting together the *PNG Ports Corporation Limited Draft Strategic Plan 2010 – 2014*. This aims to promote trade through ports that are efficient, safe and, above all, environmentally friendly, and to identify the requisite strategies that PNG-PCL should implement in the future, in order to increase value for stakeholders.
- According to this document, having analyzed the operating environment of PNG-PCL over the next five years, the biggest problem that it faces is securing the systems and facilities required to meet demand.
- The executive committee of PNG-PCL has set forth 11 targets that should be achieved over the next five years (including i) developing a strategic framework to back up the instructions given by the executive committee; ii) repairing, improving and managing the infrastructure required to operate the ports; iii) improving the efficiency and productivity of port operations; and iv) publicizing CSO policy), and is working on achieving these.
- In this plan, it is anticipated that there will be demand for funds to ensure that ports are safe and competitive during the period covered by the plan, but due to the constraints of fee regulations and transport demand, the quantity of capital investment is forecast to be considerably lower than the demand for funds. It has been pointed out that external funds will be required to fill this gap, in the form of loans from the market and funds from aid organizations such as AusAID, the ADB and the EU.
- In addition, PNG-PCL has forecast that the volume of cargo handled will increase by about 5% a year over the next five years, with container cargo increasing by about 3% a year.

6.2 Port Activities and Marine Transport Networks

(1) Cargo Throughput and Calling Vessels

- The volume of cargo handled at the 16 ports operated by PNG-PCL over the last five years is shown below.

Table 6.1 Trend of Total Cargo at 16 Declared Ports

(Revenue Tonnages: 1,000 tons)

	2005	2006	2007	2008	2009
Imports	1,880	1,916	2,278	2,557	2,568
Exports	1,006	1,067	1,098	1,233	1,108
Total	2,886	2,983	3,376	3,790	3,677
Inbound domestic cargo	1,227	1,192	1,284	1,468	1,355
Outbound domestic cargo	1,129	1,054	1,159	1,247	1,191
Total	2,356	2,246	2,443	2,715	2,546

- With regard to imports and exports, one of the characteristics is that imports are significantly higher than exports.
- Moreover, the volume of container cargo handled is shown below.

Table 6.2 Trend of Total Cargo Throughput at 16 Declared Ports

(TEU)

	2005	2006	2007	2008	2009
Imports	60,833	58,576	68,557	71,894	77,169
Exports	60,839	51490	66,692	63,172	66,421
Total	121,672	110,065	135,249	135,066	143,590
Inbound domestic cargo	53,083	51,356	56,960	60,447	58,145
Outbound domestic cargo	55,418	53,662	57,036	62,566	56,532
Total	108,501	105,017	113,996	123,013	114,677

- The figures in the table above include empty containers, but if we look only at loaded containers, we can see that there is a similar trend as that seen in regard to the volume of cargo handled, with the number of containers imported exceeding the number of containers exported twofold or threefold.
- The volume of cargo handled at ports has been on the increase in recent years, and container cargo has been demonstrating a steady increase in the same

way.

- The following shows the number of calling vessels.

Table 6.3 Trend of Total Number of Calling Vessels at 16 Declared Ports

(Number of vessels)

	2005	2006	2007	2008	2009
International trade	2,311	2,602	2,671	2,563	2,656
Domestic trade	5,033	4,573	3,520	3,621	3,551

- With regard to the number of calling vessels, although the figures for foreign trade are generally holding steady, the figures for domestic trade are on the decline.
- Although the volume of cargo is on the increase, the number of calling vessels is holding steady or falling, so it is believed that the vessels being used for both domestic and foreign trade are becoming larger.

(2) Marine Transport Networks

- The diagram below shows the regular shipping network operated by Consort Express Lines, which is the largest shipping company in PNG.
- From this diagram, we can see that Lae Port is the center of the domestic marine transport network.
- Moreover, the table at the bottom right of the diagram shows the frequency of regular sailings between ports; if there are no direct sailings between ports, Lae Port serves as a transshipment port. Another characteristic is that Rabaul Port, which is located at the eastern edge of the eastern islands, also serves as a transshipment port.
- In addition to Consort Express Lines, there are other shipping companies that operate regular shipping routes.
- In the diagram below, there is no scheduled route network linking the ports around the Gulf of Papua.

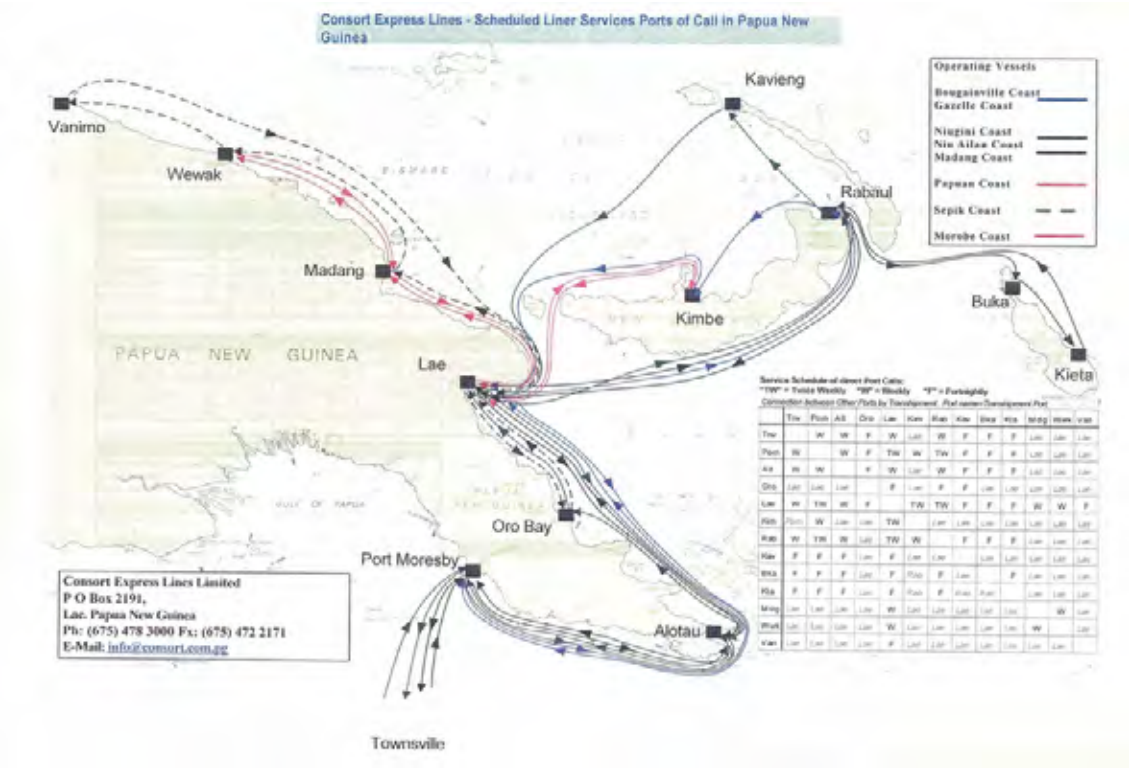


Figure 6.5 Diagram of the Domestic Marine Transport Network (Diagram of Scheduled Shipping Services Operated by Consort Express Lines)

- Moreover, the main international marine transport networks can be broadly summarized as follows, based on our interviews with Inchcape Shipping Service, which we visited, shipping schedules for each shipping company published in the local newspaper *Shipping*, and the international transport handbook.
- Firstly, there is a network linking PNG with Southeast Asia. There is a route linking Singapore (Jakarta) – major ports in PNG (Lae, POM, Madang, Kimbe, Rabaul, etc.) – Port Klang. On this route, Singapore serves as the entrepot for transport to Europe and the Middle East. Moreover, there are vessels with routes that sail from PNG to ports in the Pacific islands, such as Honiara, Noumea and Suva.
- Next, there is a network linking PNG with Australia and New Zealand. This features routes from Brisbane and Auckland to major ports in PNG, returning to ports such as Melbourne. For cargo destined for North America, Brisbane is used as the entrepot. Moreover, one can see cases in which a network is formed with a loop that includes countries in Oceania.
- The third network is the one that forms a loop with Northeast Asia, PNG and the countries of Oceania. More specifically, this links Busan, Shanghai, Hong Kong, Kaohsiung, Osaka, Nagoya and Yokohama with PNG. Japan's Kyowa Shipping Co., Ltd. operates two sailings a month to Rabaul, Lae and POM, with

Yokohama as the last port. This is mainly used for the transport of motor vehicles, using RO-RO vessels.

- The foregoing provides an overview of international marine transport networks. Almost all of the vessels deployed on these routes stop at Lae Port.
- As a consequence, Lae Port can be said to play a central role in both domestic and international marine transport networks in PNG.

6.3 The Status of Major Ports (Ports Inspected)

(1) The Port of Port Moresby (POM Port)

- The port of Port Moresby (POM Port) is the second-largest port in PNG, located in the PNG capital of Port Moresby. In terms both of the volume of cargo handled and the number of calling vessels, POM Port accounts for around 20% of the national total.
- The volume of cargo handled, the number of containers dealt with and the number of calling vessels to POM Port in the last five years are shown in the table below.

Table 6.4 The Status of Port Activities at POM Port

	2005	2006	2007	2008	2009
Volume of cargo handled (1,000 R tons)	1,082	1,170	1,296	1,394	1,435
Number of containers (TEU)	54,256	55,345	67,712	68,666	76,981
Number of calling vessels	1,422	1,473	1,464	1,232	1,399

- The main mooring facilities are the main wharf, which handles containers for international and domestic trade, as well as miscellaneous goods, and the container wharf, which is used only for containerized cargo.
- The port was constructed in around 1960, and maintenance and repair work was carried out in the 1980s, but the facilities have deteriorated to a considerable degree since then.
- The container terminal was constructed based on an old format (including the position and scale of the shed), so the biggest problem is that the yard is rather cramped. Moreover, loading and unloading takes place using the ship's own gear, which can only handle about 8 – 10 containers an hour, which is quite inefficient, so this is another major problem. Given the combination of these problems and the fact that the volume of cargo is increasing, it has become

normal for ships to be moored offshore for two to three days.

- Moreover, the area right behind the two wharves is city center of POM, and large, important vehicles connected with the port, such as trailers and container trucks, come and go on the two-lane road behind the port, mixing in with city center traffic and causing traffic jams.
- POM Port is limited with regard to the space available for its use, so, about ten years ago, the idea emerged of moving the port to the opposite shore. According to PNG-PCL, the relocation of POM Port is essential from a long-term perspective, but from a short-term perspective, the relocation does not feature in discussions because the costs of developing a new port would be immense. Nevertheless, the government is currently carrying out a study to investigate the possibility of relocating the port, with a budget of 100,000 kina.
- The reorganization and redevelopment of the terminal is due to take place in the near future.
- Moreover, there is a plan to extend the wharf by about 200 meters in a northerly direction (however, no approximate target for funds has been set). Furthermore, in order to improve cargo handling efficiency, it is planned to install two large-scale yard cranes during 2010. It is expected that cargo handling efficiency will double as a result.

Photograph 6.1 The Area on the Northern Side of the Container Wharf Due to be Extended

Photograph 6.2 The Current State of the Main Wharf

(2) Lae Port

- Lae Port, which is located in Morobe Province, is the biggest port in PNG. As well as being positioned as the gateway port to the Highlands region, where the population and resources are concentrated, it has hub functions from the perspective of domestic marine transport, and can be described as the most important port in PNG.
- Lae Port accounts for about 50% of total cargo handled throughout the country, and about 15% of all calling vessels in PNG.
- The volume of cargo handled, the number of containers dealt with and the number of calling vessels Lae Port in the last five years are shown in the table below.

Table 6.5 The Status of Port Activities at Lae Port

	2005	2006	2007	2008	2009
Volume of cargo handled (1,000 R tons)	2,673	2,464	2,794	3,117	2,984
Number of containers (TEU)	122,589	112,411	124,964	130,682	129,030
Number of calling vessels	943	840	925	948	1030

- The main mooring facilities consist of Berths 1 – 3, which handle foreign trade containers and miscellaneous cargo, Berth 4, which handles domestic trade cargo, and Berth 5, which is for passengers.

- In order to deal with the growing volume of cargo, work is currently being carried out at Lae Port to extend the wharf by approximately 100m southward from Berth 3; this is a self-funded project being undertaken with a budget of approximately 90 million kina, and is due to be completed within the year or early next year.
- Moreover, there are plans for an artificially-excavated port to be developed as a tidal basin project, on a site adjacent to the northern side of the existing port, with aid from the ADB. This project is currently at the prequalification survey stage, and if the procedures go smoothly, the contract should be concluded within the year, with work commencing early next year. The construction work is expected to take 30 months; phase 1 will involve excavating the port to a length of 700m, a width of 400m and a depth of 13m, and a 240m-long multipurpose terminal and related facilities will be developed. Total project costs are expected to be $154 million.
- The problem with Lae Port is that there is a lack of facilities to deal with the increasing volume of cargo. On average, ships usually have a waiting time of two to three days. Moreover, Berth 1 has become severely decrepit, and a weight restriction has been imposed. Furthermore, there is no large-scale cargo handling equipment, such as gantry cranes, so the port employees are forced to use inefficient loading and unloading procedures, and there are times when the cargo handling efficiency is 8 – 15 TEU an hour, falling to just 4 – 5 TEU an hour at Berth 1. The yard behind the wharf is also cramped and PNG-PCL plans to develop an inland depot on a site a little way from the port.
- There are plans to redevelop and reorganize the yard area in the near future.
- Moreover, there are plans to extend the wharf another 300m from the site of the extension work currently being undertaken. Consequently, coordination has begun with a view to reorganization, including the port facilities owned by Taiheiyo Cement Corporation, which are located on the section to be extended.
- One of the biggest problems at Lae Port is the reconstruction of Berth 1, but there is a general lack of mooring facilities, so the reorganization of Berth 1 cannot start until the extension of the wharf in the direction of Taiheiyo Cement has been completed. However, at this point in time, no funding target has been set for either project.
- With regard to cargo handling equipment, just as at the port of Port Moresby, there are plans to install two large-scale yard cranes in 2010.

Photograph 6.3 The Current State of Lae Port (area in the foreground is where construction is currently underway)

Photograph 6.4 The Current State of Berth 1

(3) Rabaul Port

・ Rabaul Port is a good natural port located on the northeastern edge of New Britain Island. Since the volcanic eruption in 1994, the town itself has gradually

been reconstructed, and Rabaul Port has also been regaining its vitality as a result. The volume of cargo handled in 2009 was approximately 330,000 tons (making it the fourth-largest port after Lae Port, the port of Port Moresby, and Kimbe Port), while the volume of containers handled was approximately 120,000 TEU.

- The volume of cargo handled, the number of containers dealt with and the number of calling vessels of Rabaul Port in the last five years are shown in the table below.

Table 6.6 The Status of Port Activities at Rabaul Port

	2005	2006	2007	2008	2009
Volume of cargo handled (1,000 R tons)	313	305	330	392	330
Number of containers (TEU)	20,439	13,300	14,065	15,972	12,194
Number of calling vessels	586	752	622	655	455

- The port facilities at Rabaul Port consist of Berths 1 and 2, both of which are used for foreign trade cargo.
- The biggest problem at Rabaul Port is the fact that the flooding that occurs as a result of the heavy rains in the area causes large quantities of earth and sand to flow into the port. As a result, the depth of the water, which was originally 8m, has become rather shallow, at 6 – 7m. Moreover, an anti-flood pond was created as somewhere to hold this soil and sand temporarily, but it soon filled up and it costs 88,000 kina per three months to remove it, with the removal of soil and sand around port facilities costing around 18,000 kina per month.
- The port facilities have become very decrepit and it seems that corrosion has progressed to a considerable degree since the volcanic eruption. Another major problem is the low water pressure when supplying water to the ships. Furthermore, there are no cranes on the wharf, so cargo handling efficiency is poor.

Photograph 6.5 The State of Berth 1

(4) Kimbe Port

- Kimbe Port was not the subject of a field survey, but as it is the third-largest port in PNG, we will provide a brief introduction, based on materials obtained from PNG-PCL.
- Just like Rabaul Port, Kimbe Port is located on the island of New Britain, in the center of the island, on its northern side, and is the port serving the capital of West New Britain Province.
- Kimbe Port is the third-largest in PNG, after Lae and POM ports, in terms of the volume of cargo and number of containers handled; in terms of the number of calling vessels, it is in fourth place, after Wewak Port (both figures are from data for 2009).

Table 6.7 The Status of Port Activities at Kimbe Port

	2005	2006	2007	2008	2009
Volume of cargo handled (1,000 R tons)	434	488	527	622	600
Number of containers (TEU)	8,592	9,937	15,095	14,943	12,332
Number of calling vessels	730	685	621	587	560

- The main port facilities are the main wharf, which is 117m long and has a depth

of 10.7m, and the wharf for small vessels.

- Along with the ports of Lae and POM, Kimbe is one of the few PNG ports to make a profit.
- One of the problems with Kimbe Port is that the quantity of palm oil exported over the next ten years is forecast to double (approximately 330,000 tons of palm oil were exported in 2009), but there is already competition between dry cargoes and container cargo, which both use the main wharf; in other words, it is envisaged that there will be a lack of wharf space. Consequently, in the short term, it will be necessary to extend the mooring space by anchoring barges for mooring purposes and installing berthing or mooring dolphins alongside the quay. In the long-term, the development of a wharf specifically for palm oil and oil products will be required.

6.4 Menu of PNG-PCL Projects

(1) Awareness of the Current Situation

- The awareness of PNG-PCL with regard to the current state of port facilities is as follows.
- Most of the PNG-PCL port facilities were developed in the 1960s, but hardly any of them underwent appropriate maintenance thereafter, and their functions have not been upgraded. As a result, one can see the deterioration of the port facilities, to some extent; in particular, the ports of Lae and POM cannot keep up with the growth in economic activity. The main reasons for this are as follows.

  - The lack of appropriate, prudent maintenance over the last 40 years.
  - Before the regulatory reforms in 2002, tariffs and port fees were intentionally kept low, to the extent that it was not even possible to cover costs.
  - The poor funding situation prior to 2004 has proved a hindrance to subsequent capital outlays.
  - There was a lack of interest in and funding for port infrastructure on the part of the government.

Table 6.8 Specifications of Port Facilities and Permissible Loadings at 16 Declared Ports

PORTS	WHARVES					PERMISSABLE LOADINGS				
	Berths	Length	Width	Draft	Deck height	Berth	Distributed Tons/s	Road Vehicle		
								Truck	Semi-Trailer	Fork Lift

								qm			
1	**AITAPE**	1	18m	6.2m	4.3m	2.5m	1-3	1.46	T9	-	F5
		2 & 3	8m	4.4m	4.3m	2.5m					
2	**ALOTAU**	1: Overseas	93m	18.02m	10.0m	2.4m	1	2.93	T9	-	F7
		2: Coastal	56m	9.8m	4.9m	2.1m	2	1.46			
		Barge ramp	Width 8m. Grade 1 in 12								
3	**BUKA**	1: Main wharf	31m	5.2m	3.6m	2.2m	1	0.58	T6	-	F2.5
		2: Small ships	15m	3.0m	0.5m	2.0m					
4	**DARU**	1: Main wharf	30m	12.2m	2.4m	4.8m	1	1.50	T6	-	F2.5
		Barge Ramp	Width 6m Grade 1 in 8								
5	**KAVIENG**	1: Main wharf	94m	12m	7.0m	2.7m	1	2.44	T17	ST28	F7
		2: Small ships	12m	3.8m	1.5m	1.4m	2	0.97	-	-	-
6	**KIETA**	1: Overseas	122m	10.9m	7.5m	3.0m	1: new	3.30	T17	ST28	F20
		2: Coastal	58m	8.2m	4.8m	3.0m	(Old)	2.44	T9	-	F7
		3: Feeder	58m	8.2m	4.8m	2.3m	2 & 3	1.46	T9	-	F7
		4: Barge ramp	Width 12m Grade 1 in 8								
7	**KIMBE**	1: Main wharf	117m	12.1m	10.7m	3.1m	1 – 3	2.44	T17	ST28	F7
		2: Small ships	25m	12.1m	5.5m	3.1m					
		3: Small ships	17m	12.1m	5.9m	3.1m					
		Barge ramp	Width 9m Grade 1 in 8								
8	**LAE**	1: Overseas	123m	12.0m	11.0m	2.7m	1	1.95	T17	ST28	F5
		2: Overseas	123m	12.0m	11.0m	2.7m	2	1.95	T17	ST28	F10
		3: Overseas	184m	37.0m	11.0m	2.7m	3	3.90	T17	ST28	F20
		4: Coastal	54m	13.0m	4.9m	2.7m	4 & 5	3.90	T17	ST28	F12
		5: Coastal	35m	13.0m	2.7m	2.9m	Tanker	3.92	T10	ST12	F3
		Tanker Berth	100m	10.0m	13.7m	3.5m					
		Barge ramp	Width 12m Grade 1 in 8								
9	**LORENGA**	1: Nabu wharf	15m	9.1m	5.1m	2.9m	1	2.44	T19	-	F5
	U	2: Salasia ''	40m	20.0m	1.4m	1.5m	2	0.97	T13	-	F1
10	**MADANG**	1: Overseas	137m	12.8m	10.1m	3.1m	1	2.44	T17	ST28	F10
		2: Small ships	30m	4.5m	1.6m	1.8m	2	0.97	T6	-	F2
11	**OROBAY**	1: Main wharf	70m	12.2m	11.4m	2.82m	1 – 3	2.93	T17	ST28	F7
		2: Small ships	23m	12.1m	10.5m	2.5m					
		3: Small ships	23m	12.1m	10.5m	2.5m					
		Barge ramp	Width 6m Grade 1 in 12								
12	**PORT**	1: Main wharf	106m	18.2m	7.6m	4.4m	1 – 3	2.44	T17	ST28	F10
	MORESBY	2: Main wharf	107m	18.2m	7.6m	4.4m					

		3A: Coastal	67m	18.2m	3.8m	4.4m					
		3B	113m	18.2m	4.5m	4.4m					
		Barge ramp 1	Width 6m Grade 1 in 8								
		Barge ramp 2	Width 9m Grade 1 in 8								
		4A: Container	125m	25.3m	10.6m	3.6m	4	4.09	T17	ST28	F30
		4B	25m	5.0m	3.0m	2.0m	4B	0.97	T1	-	-
13	**RABAUL**	1: Blanche St.	122m	12.12m	7.9m	2.8m	1	2.44	T17	ST28	F7
		2: Bay Road	152m	15.2m	10.2m	2.8m	2	2.44	T17	ST28	F10
							Small ships	0.97	T3	-	F1
14	**SAMARAI**	1	28m	12.8m	7.8m	2.7m	1	1.46	T9	-	F7
15	**VANIMO**	1	28.6m	10.0m	4.51m	2.7m	1	2.20	T9	-	F7
16	**WEWAK**	1: Overseas	73m	12.1m	6.2m	3.5m	1	2.20	T17	ST28	F5
		2 & 3: Coastal	30m	12.5m	3.0m	1.3m	2 & 3	2.20	T17	-	F5

(2) High-priority Projects

・ Due to a lack of its own funds, PNG-PCL hopes to undertake the following high-priority projects, including those at the preliminary consideration stage, using funds from donor countries, such as Japan.

i) Reconstruction of the international wharf at Alotau Port: 37 million kina

・ This project focuses on rebuilding the existing international wharf in order to deal with the increase in container cargo and processed fishery product business. The detailed design specifications have been prepared. The main content of the project includes dredging 100,000m^3 and developing a causeway and storage facilities.

ii) Project to extend Berth 4A at the port of POM: 280 million kina

・ This project is in accordance with the National Transport Development Plan and the detailed design specifications have been prepared. It involves developing a foreign trade wharf with a length of 232m and a domestic trade wharf with a length of 57m, as well as developing the areas behind the wharves.

・ This will also serve as a substitute in the event that the Main Wharf is closed for safety reasons.

iii) Project to extend the wharf at Lae Port and project relating to the cement

factory: 400 million kina

- This is the extended portion of the extension that is currently underway; the project focuses on dismantling the existing dolphins and redeveloping a 300m-long wharf, in order to eliminate congestion and deal with containers. The detailed design specifications have been prepared.

iv) Project to develop trestle at Daru Port: 25 Million kina

- This project focuses on reconstructing facilities, due to the safety problems of facilities that are severely corroded and the question of handling cargo efficiently. The detailed design specifications have been prepared.

v) Maintenance dredging at major ports: 60 million kina

- This project focuses on conducting a study to measure depth, in order to gain an understanding of the volume of soil that needs to be dredged from sea routes and in front of the wharf, followed by dredging using a suction vessel.

vi) Project to develop an inland depot at Bugandi: 50 million kina

- This project involves developing an inland bonded depot in partnership with Bugandi High School, on a site 1.6km away, in order to eliminate the lack of yard space at Lae Port.

vii) Formulation of a masterplan: 40 million kina

- Following on from the formulation of the five-year strategic plan, this project focuses on formulating a long-term plan covering a period of around 20 years, in order to make it possible to undertake future development. Consideration will be given to matters from such perspectives as international trends in port development and operation, the potential for industrial growth, and the conditions required to realize this.

viii) Facilities to process ship and industrial waste at Lae and POM ports: 10 million kina

- This project focuses on the development of incinerators at the urban ports of POM and Lae, to facilitate the safe processing of waste, such as substances that need to be disposed of under quarantine conditions.

- The aforementioned projects ii), iii) and vi) target ports that the survey team visited and have also been referred to in section 6.3 (The Status of Major Ports), so it is possible to understand the necessity and urgency of these projects, to a certain degree. Moreover, with regard to project vii), as will be pointed out in the

next section on “Future Directions”, one can understand the necessity from the perspective of developing and operating ports systematically, amidst funding constraints.

- The most recent volume of cargo handled at Alotau Port, mentioned in i) above, is shown below. According to this, although the number of containers is growing, this is not a particularly large increase.

Table 6.9 The Status of Port Activities at Alotau Port

(Revenue tonnage; TEU; vessels)

	Volume of cargo handled	Number of containers	Number of calling vessel
2005	148,970	4,409	345
2009	147,745	4,876	446

- Naturally, sufficient consideration needs to be given to the necessity and urgency of these projects.

(3) Developments Concerning Relevant Aid Organizations

- The ADB has started work on a large-scale project at Lae Port, while the next stage in the deployment of the Community Water Transport Project has gone back to the drawing board.
- A new strategy is being considered, with 2011 as the target date, but it is believed that the next project to follow the Lae Port Tidal Basin Project will not start until 2013 or even 2014.
- With regard to AusAID, the wharf development project that it was supporting on the island of Bougainville has just been completed; in the future, apart from small-scale projects, AusAID has a policy of devoting its energies to capacity building, such as improvements in port management ability.
- It is not a development relating to aid organizations, but on April 24, 2009, PNG-PCL submitted a project list to the EU, requesting funds for port infrastructure.
- This project list set forth proposals for 32 hard and soft projects, including some of those listed in section (2) (High-priority Projects) above.
- It is felt that this list should be referred to when considering Japanese aid for the PNG ports sector.

6.5 A Few Proposals (Focusing on Project Ideas)

- The following matters can be pointed out with regard to the ports where the field surveys were conducted.
- At the port of POM, which has the capital territory as its hinterland, there are forecasts that the population will increase rapidly (the population is forecast to reach almost a million over the next seven years). Consequently, it is anticipated that the volume of cargo will increase steadily. At the same time, in its current state, there is a strong possibility that the port of POM will not reap the positive effects of the LNG projects, concerning which there are such high hopes.
- Accordingly, it is conceivable that the existing container terminal could be rebuilt as a fully-fledged terminal. The plan formulated by PNG-PCL has been reconsidered to create a reorganization and redevelopment project that focuses on extending the wharf, which is required in order to meet the increase in demand, establishing a container yard behind the wharf, and installing large-scale loading and unloading equipment in order to improve cargo handling efficiency. The depth of the water at the wharf is 10.6m, so consideration could also be given to increasing the depth with a view to enabling larger vessels to enter the port.
- It will be necessary to determine the scale of the wharf extension, the water depth and the amount of cargo handling equipment to be introduced after giving consideration to the volume of cargo forecast to be handled and the size of the ships that it is envisaged will visit the port in the future.
- Furthermore, separating the urban traffic in the hinterland from the port vehicles is believed to be an important point for consideration, in light of the future increase in cargo volume. The functions of the city are close by and the space for the port is limited, so it is necessary to conduct a study (create a masterplan) that gives comprehensive consideration to the reorganization and redevelopment of all port functions (including considering moving part of those functions), including the main wharf, the container wharf and other spaces. In doing so, consideration should be given to the relocation of the port of POM, as one of the possible future directions.

- It is expected that the volume of cargo handled at Lae Port will increase in the future, due to the LNG project, the hinterland and its functions as a hub for PNG.
- The Tidal Basin Project Phase I, which is being conducted by the ADB, involves a multipurpose terminal and it can easily be envisaged that containers will become the main focus of this. However, the aid from the ADB does not include

superstructures such as cargo handling equipment. Consequently, one could conceive of support both in financial and technical terms, with regard to the introduction of superstructures (gantry cranes, etc.) and soft systems for the efficient marshaling of containers, as well as providing technical guidance in the operation of container yards, including cargo handling equipment, working in partnership with the ADB, which is developing infrastructure, such as wharves, channels and yards.

- Berth 1 has become severely decrepit and the Deputy Director of PNG-PCL has stressed that its refurbishment is required as a matter of urgency. One plan focuses on the full-scale improvement of Berth 1, with its redevelopment as a container wharf. This reconstruction project is closely related to the project focused on the extension of Berth 3, which is currently underway, so cooperation in the form of the provision of funds could be considered after formulating a redevelopment and reorganization plan, including these two projects, based on a detailed forecast of demand.

- Measures to remove sand and soil, which are the biggest issue at Rabaul Port, are believed to be a very difficult issue to raise when discussing support.
- At Rabaul Port, because containers are stored outside the port, it is anticipated that there will be a lack of space behind the wharves. Consequently, it is believed that, in parallel with measures to deal with the aging of the facilities, a full-scale revision should take place that focuses on the access pier-style wharves and the sheds behind the wharves, in order to redevelop the area as a terminal that can efficiently handle containers.

- In addition, we can say the following.
- Most of the port facilities in PNG were developed in the 1960s, since when almost half a century has passed. During this time, they have not necessarily received adequate maintenance and many of the facilities are noticeably decrepit. During this survey, the team conducted field surveys at three ports, and it is envisaged that the situation is the same at the other ports.
- Moreover, responses to container transport, which has developed rapidly, are lagging behind to a considerable degree. The format of the wharf, the position of the sheds, the scale of the yard and the efficiency of cargo handling: all of these make it difficult to deal with containerization.
- Due to this situation, it would be desirable to carry out a comprehensive inspection of the soundness of all facilities at all of the ports of PNG-PCL, consider the order of priorities for the improvement of facilities, and carry out those improvements in order. In doing so, the improvement of cargo handling

efficiency will be a major theme. Moreover, at major ports like Lae, where development is anticipated in the future, it will be necessary to formulate a masterplan from the perspective of undertaking systematic port development.

- One important measure in order to carry this out would be to conduct a “study on the Nationwide Port Development / Improvement Strategy in PNG” (provisional name), identifying the networks and division of roles between all of the ports, and formulating a development and improvement plan that sets forth the scale of the projects and the order of their priority. Moreover, one could conduct a detailed investigation of the wharves requiring urgent improvement, while at the same time considering financial assistance as an urgent rehabilitation project.

- PNG-PCL and the DOT’s Maritime Transport Division do not have an understanding of the facilities provided for river transport and the volume of cargo transported, nor the types and volume of cargo handled by port facilities being operated by the private sector; there is no mechanism that would enable them to acquire this information.

- Consequently, the enhancement of systems for managing facilities, such as the integrated development of port statistics and the creation of a port facility ledger, should be borne in mind when conducting the aforementioned survey. In response to this study, it will be necessary to devise ways of providing financial assistance and increasing the efficiency of plan formulation, linking this to ongoing technical assistance.
- Furthermore, in the “study on the Nationwide Port Development / Improvement Strategy in PNG” (provisional name), naturally, there are many areas where road transport has not been developed, so it will be vital to formulate a plan that creates a complementary relationship between the road network and the marine transport network.

- Given the accumulation of population and industry, as well as the LNG project, the only port supporting the Highlands region where further demand is anticipated is, effectively speaking, Lae Port. The importance of Lae Port is growing steadily, and it is expected that there will be a critical lack of port facilities to deal with this. Taking the opportunity offered by the fact that the ADB has embarked upon the full-scale development of a multipurpose terminal, measures focused on the intensive investment of funds in Lae Port could be one means of dealing with this. One candidate for a project would be the aforementioned co-finance project with the ADB, focusing on the further

extension of Berth 3 and the redevelopment of Berth 1, for which there is a strong desire on the part of PNG-PCL; moreover, a study examining the formulation of a masterplan that included these projects could also be the focus of deliberations.

- The volume of cargo to be handled by PNG-PCL over the next five years is forecast to grow by about 5% a year, with containers increasing by about 3% a year. Under the current circumstances, it will be difficult to respond to these increases instantly; improving the efficiency of cargo loading and unloading through the introduction of large-scale cargo-handling equipment is an important theme, and technical and financial support for this could be one focus of aid.

- The ADB has formulated a jetty development plan to enhance inland water transport on the Sepik River, as a form of Community Water Transport (CWTP), and is providing financial aid for this. However, it has not yet developed an adequate number of jetties. According to one CWTP manager, they wish to develop a total of 200 jetties, in partnership with the coastal shipping network. With regard to this, discussions have begun with the ADB (according to the manager); depending on how the ADB responds, measures could include considering using Japanese funds (grants) to carry out development as grassroots measures, including measures to maintain the standard of living of settlements that are isolated from transport, which are unable to benefit from road transport.

- When private sector companies develop port facilities for their own use, a permit from PNG-PCL is required for development within the port limits (and possibly from the DOT outside the port limits?), but the private sector company develops and operates the port facility themselves and also provides it for use by other companies. Consequently, there is an awareness that this competes with PNG-PCL. At the biggest port, Lae, five companies, including construction companies and shipping companies, are competing with the port activities of PNG-PCL. According to an ADB official, there are at least 11 such private ports. Consequently, after clarifying the division of roles of PNG-PCL and the private sector in port activities, it will be necessary to develop a policy for dealing with private sector facilities and a policy on private sector involvement in port activities. Moreover, there are many government institutions involved in the activities of PNG-PCL, and the basic laws governing ports are the Harbour Act and the Companies Act, so it seems that the systems and institutions are rather complex. In order to increase the competitiveness of the ports and implement

efficient port development, maintenance and management, a list should be made of future support tasks, focusing on legislation relating to ports and the reform and improvement of administrative systems.

List of Agencies Visited and Officials Consulted

	A.M.	P.M.
18th		・JICA Office
19th (Mon)	・Department of National Planning & Monitoring ・Department of Transport	・AusAID ・ADB
20th	・ Site Survey of PNG-Ports (Operations Dept.) & the port of POM Mr. Kamit NANADAI; Operations Co-ordinator Mr. Richard ANGELI; Building Project Coordinator, and others	・ Maritime Transport Division, Department of Transport Mr. Charles SINIU; Acting First Assistant Secretary Mr. Manau SUU; Acting Assistant Secretary, and others ・Community Water Transport Project、DOT Mr. Pobert KAUL; Project Manage ・ National Maritime Safety Agency Capt. Narura. RAHMAN; Executive Manager of Navigation & Safety Services, and others
21st	・ADB Mr. Douglas LUCIUS; Transport Specialist	・PNG-Ports Mr. Ian Hayden-Smart; Strategic Management & Business Development Advisor
22nd	・ICCC Mr. Jack Timi; Principal Analyst (Ports & Electricity), Prices, Regulatory Affairs & Special Projects Division Mr. Sam ROWARO; Manager Regulation	・Department of Transport Mr. Manau SUU ・ADB Mr. Douglas LUCIUS
23rd (Fri)	・Department of Transport Mr. Manau SUU	・Inchcape Shipping Services Mr. Joe AUFEKE ; Project /National Operations Manager ・PNG-Ports (Operations Dept.) Mr. Kamit NANADAI, and others
24th (Sat)		・Site Survey of Rabaul Port Mr. Joseph PATALUR; Assistant

		Port Manager-RABAUL
26th (Mon)	・PNG-Ports RABAUL Mr. Joseph PATALUR, and others	・Inchcape Shipping Service Mr. Davis TUMARI; Branch Manager- RABAUL
27th		・PNG-Taiheiyo Cement Corporation Mr. SHIOMI; President, and others
28th	・PNG-Ports LAE and Site Survey of Lae Port Mr. Mathias GEOLTAU; Acting Port Business Manager Mr. Cesar de Windt; Operation Advisor Mr. Felic BAURI; Assistant Business Manager Mr. Kato; Port Engineer, IPBC	・Inchcape Shipping Services Mr. Issac THOMSEN; Manager, Lae & PNG North
29th		・PNG-Ports Mr. Brian RICHES; CEO Mr. Michael NYE; Chief Operating Officer Mr. Ian Hayden-Smart
30th (Fri)	・PNG-Ports Ms. Hane Tabe- KILA; Senior Legal Officer	・JICA Office

7. The Air Transport Sector

7.1 The Aviation Sector

7.1.1 Organizations Relating to Aviation

The Civil Aviation Authority (CAA), the organization relating to the aviation sector in PNG, was reformed in recent years, and was divided into three bodies, as shown in Figure 7.1.1: the PNG-Civil Aviation Safety Authority (PNG-CASA), the National Airport Corporation (NAC) and PNG-Air Service Limited (PNG ASL). These operate the aviation sector based on the following allocation of duties.

- CASA: Aviation sector regulatory services
- NAC: Airport operation services
- PNG ASL: Air traffic services

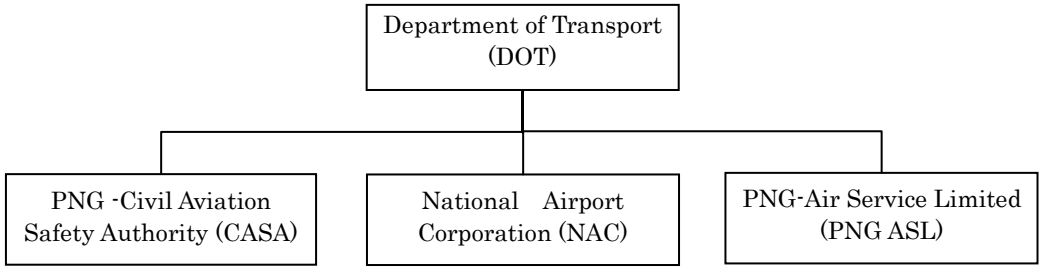


Figure 7.1.1 Organizational Diagram Relating to Airports

7.1.2 Airports

If we count both large and small airports, PNG has more than 450 airports; the main airports, which are located in the provincial capitals shown in Figure 7.1.2 below, operate regular scheduled services.

(Source: ADB report)

Figure 7.1.2 Diagram Showing the Location of Major Airports

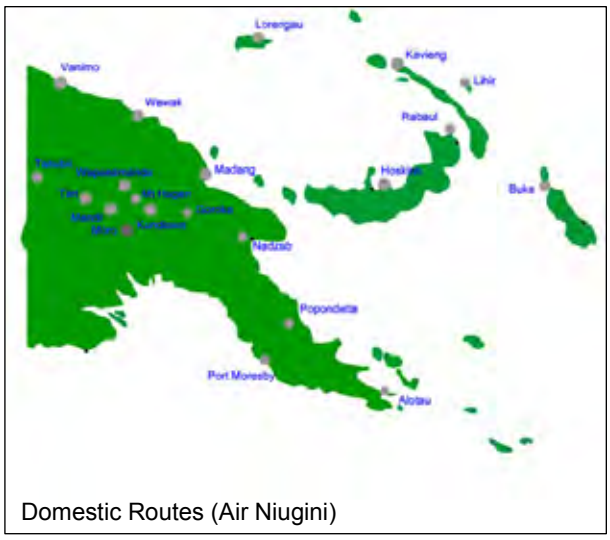
7.1.3 Air Routes and Airlines

The main airlines operating in PNG are Air Niugini (PX) and Airlines of Papua New Guinea (CG), both of which use Port Moresby as their hub airport. In addition, there are numerous small-scale airlines that operate only on a charter basis.

Air Niugini operates direct flights between Narita Airport and Port Moresby, running two flights a week as of August 2010. The other international routes link PNG with Singapore, the Philippines, Malaysia, China, Australia (Cairns, Brisbane, Sydney), the Solomon Islands and Fiji. The aircraft owned by the airline are F100, DHC-8, B757 and B767, and some of the flights are operated as codeshares with Qantas Airways of Australia.

Airlines of PNG mainly operates on domestic routes, but does operate some international flights, to Australia. The aircraft owned by the airline are F100, DHC-8 and DHC-6.

International Routes (Air Niugini)



Domestic Routes (Air Niugini)

(Source: Air Niugini homepage)

(Source: Airlines of PNG homepage)

Figure 7.1.3 Diagram Showing the Positions of Major Airports in the Air Network

7.1.4 Plans Relating to Aviation in PNG

In the *Papua New Guinea Development Strategic Plan 2010 – 2030*, published by the Department of National Planning and Monitoring, the government of PNG has stated that airports have a very great role to play in the economic, political and social development of PNG, and has set forth the three strategies shown in Table 7.1.1. In addition, the medium-term development strategy is being implemented with support from the ADB.

Table 7.1.1 Medium-term Development Strategy Targets for PNG in the Aviation Sector

Item	Current Value	Problems	Target Value for 2030
Share of airports meeting international standards	32% (7 airports / 22 airports)	Around 70% of provincial airports do not meet international standards.	100%
Improving airports to deal with larger aircraft	1 airport (Port Moresby Airport)	Almost all provincial airports lack the facilities to deal with future demand.	10 airports
Rehabilitation of airports in remote areas	0 airports	Most of the runways in remote areas are not used. By rehabilitating these provincial airports, economic development can be promoted.	50 airports or more

Moreover, the government of PNG has formulated the National Airports Strategic Management Plan (2009 - 2018), in which it sets forth a masterplan for priority projects at four airports: Port Moresby Airport, Lae Nadzab Airport, Mount Hagen Airport and Tokua Airport.

7.1.5 Japan's Aid Policy and Achievements to Date in the Aviation Sector

At the fourth Pacific Alliance Leaders Meeting, in May 2006, Japan cited "sustainable development" and "economic growth" as priority sectors for cooperation with Pacific island nations; moreover, JICA has positioned the development of socioeconomic infrastructure as a priority sector in support for PNG. Increasing the safety and security of airports and improving the facilities to meet future demand are projects that would contribute to the sustainable development of the regional economy, so are in accordance with these priority sectors.

With regard to past performance in providing support to the PNG aviation sector, Japan provided aid for the Port Moresby International Airport Development Project (yen loan; phase I (1988 - 1998): 8.45 billion yen; phase II (1996 - 2001): 4.31 billion yen) and for the New Rabaul (Tokua) Airport Urgent Development Plan (grant; 2.597 billion yen between 1995 and 1997).

In the Port Moresby International Airport Development Project, as well as upgrading and expanding the terminal facilities, the project promoted both international and domestic exchanges of people and goods by developing and improving aviation security facilities; as a result, it contributed to the revitalization of the PNG economy.

Moreover, the New Rabaul (Tokua) Airport Urgent Development Plan focused on urgently upgrading Tokua Airport as a substitute airport for Rabaul Airport, which

had been closed as a result of the volcanic eruption that occurred in September 1994; this plan restored the airport's functions as a major airport and contributed to the development of the air transport network.

7.1.6 Development Relating to Other Aid Organizations

With regard to the aviation sector, the ADB is currently implementing the Civil Aviation Development Investment Program 2009 – 2018 (CADIP), which focuses on developing provincial airports across the country. An outline of this is provided below.

1) Objectives and Outline of the Project

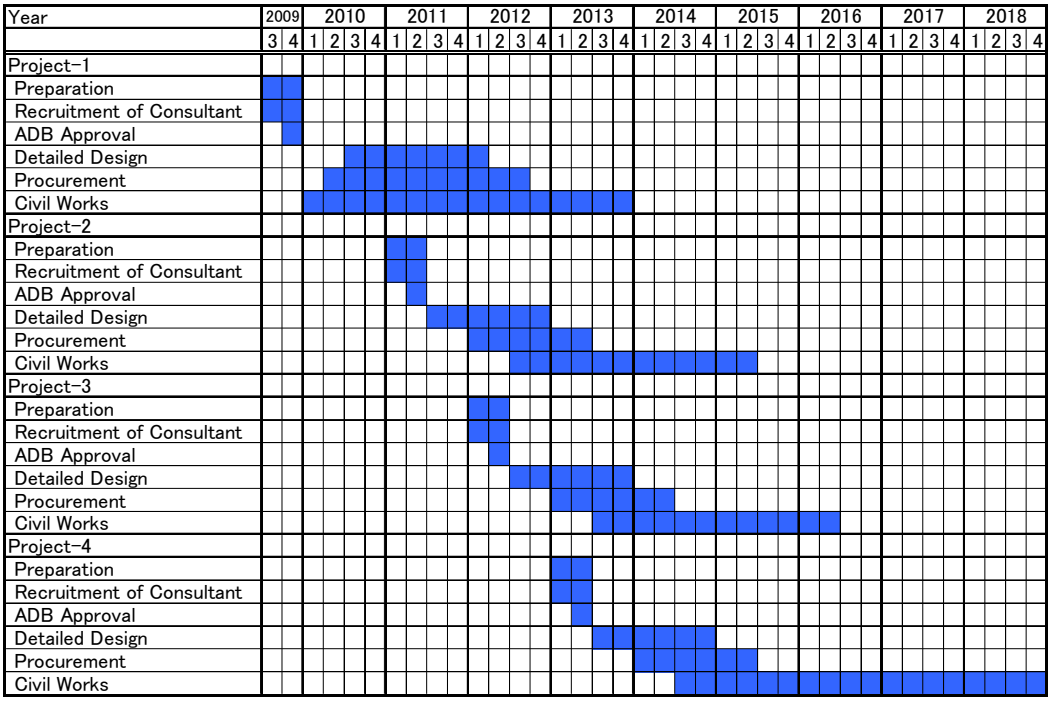
This project aims to improve safety and security systems at PNG's 21 national airports (the airports in the provincial capitals); the project content can be broadly classified as follows.

i) Expansion of the apron for domestic routes at Port Moresby Airport and the improvement of Lae Nadzab Airport
ii) Improvement of facilities to deal with F100
iii) Improvement of facilities to deal with B737
iv) Installation of security fences
v) Improvement of flight support facilities at Port Moresby Airport
vi) Donation of fire engines
vii) Technical assistance

2) Project Costs and Schedule

According to *Report and Recommendation of the President to the Board of Directors, Project Number: 43141, October 2009*, the project costs and schedule for CADIP are divided into four projects, covering the period from July 2009 to December 2018; the total cost is planned to be US$565 million. Currently, Project 1 is underway, but the content of the projects from Project 2 onwards, including the airports targeted, have not yet been determined and will be planned and amended within the CADIP framework.

Table 7.1.2　CADIP Schedule



3)　Content of the Project

The project content is summarized in Table 7.1.3, based on the results of interviews with the NAC conducted in August 2010, as part of this survey. From the initial plan detailed in the *Report and Recommendation of the President to the Board of Directors, Project Number: 43141, October 2009*, the content of the CADIP projects has been considered in light of the results of deliberations concerning the projects required and also recent increases in the cost of materials and labor in PNG, and the project content is being amended as a consequence.

Table 7.1.3　CADIP Project Content

Project	No	Airport	Scope of Work	Construciton period			Cost in MILLIONS(K) including GST	
				From	To	Week		
1	1	Port Moresby	Domestic Apron Extension	Jul,2010	Jun,2011	52	11.0	241.7
	2	Mount Hagen	Upgrading for F100 Strengthen exist pavements for B737	Jan,2011	Jun,2012	72	**119.0**	
	3	Hoskins Stage 1	Upgrading for F100	Oct,2010	Dec,2011	60	45.0	
	4	Wewak Stage 1	Runway Extension for F100	Oct,2011	Mar,2013	70	25.0	
	5	Gurney	Upgrading for F100	Oct,2013	Sep,2014	36	10.0	
	6	Hoskins Security	Security Fence	Jan,2010	Aug,2010	30	4.6	
	7	Wewak Security	Security Fence	Apr,2010	Dec,2010	30	4.8	
	8	Kavieng Security	Security Fence	Jan,2010	Aug,2010	30	4.8	
	9	Port Moresby	Instrument Landing system	Jan,2009		52	7.5	
	10	Port Moresby	Fire Tenders	Jan,2009		52	5.0	
	11	Port Moresby	Program Support and Capacity Development	Jan,2009		52	5.0	
2	12	Nadzab	Upgrade international	Jul,2013	Dec,2014	78	**100.0**	207.6
	13	Madang Stage 1	Upgrading for F100	Feb,2013	Jul,2014	72	68.0	
	14	Momote	Security Fence	Jul,2012	Mar,2013	30	5.1	
	15	Gurney	Security Fence	Jul,2012	Mar,2013	30	4.6	
	16	Nadzab	Security Fence	Jul,2010	Mar,2011	30	5.6	
	17	Goroka	Security Fence	Apr,2010	Dec,2010	30	4.3	
	18	Port Moresby	Fire Tenders	Apr,2010	Dec,2010	30	5.0	
	19	Port Moresby	Air Traffic Management	Apr,2010	Dec,2010	30	10.0	
	20	Port Moresby	Surveillance	Apr,2010	Dec,2010	30	5.0	
3	21	Madang Stage 2	Upgrading for B737	Jul,2013	Dec,2014	90	**100.0**	207.5
	22	Wewak Stage 2	Runway Extension for F100	Jul,2014	Mar,2016	90	75.0	
	23	Hoskins	Fire Tenders	Jul,2013	Dec,2014	30	7.5	
	24	Port Moresby	Air Traffic Management	Jul,2014	Mar,2016	30	20.0	
	25	Port Moresby	Surveillance	Jul,2014	Mar,2016	30	5.0	
4	26	Tokua	Upgrading for B737 Strengthen exist pavements for B737	Apr,2013	Jun,2014	60	59.0	211.5
	27	Goroka	Upgrading for F100	Apr,2014	Jun,2015	60	40.0	
	28	Kavieng	Upgrading for F100	Apr,2014	Jun,2015	60	50.0	
	29	Gurney Stage 2	Upgrading for F100 Strengthen exist pavements for B737	Apr,2014	Jun,2015	60	50.0	
	30	Unallocated	Fire Tenders	Apr,2014	Jun,2015	30	2.5	
	31	Port Moresby	Air Traffic Management	Apr,2014	Jun,2015	30	10.0	

: Expansion of facilities

: Expansion of facilities to deal with F100

: Expansion of facilities to deal with B737

: Installation of security fences

: Other (fire engines, flight support facilities, technical assistance, etc.)

7.2 Results of the Field Surveys

7.2.1 Selection of Airports to be Surveyed

As shown in Table 7.2.1, the three airports where field surveys were conducted were selected in light of their importance in PNG, the current number of passengers, and whether they had previously received assistance from Japan.

Table 7.2.1 Reasons for Selecting the Airports Surveyed

Port Moresby Airport	Lae Nadzab Airport	Tokua Airport
・Airport serving the capital ・Past recipient of yen loans	・Second capital ・Second-largest airport in terms of passenger numbers after Port Moresby	・Located on an island other than the main island ・Past recipient of an ODA grant from Japan ・Third-largest airport in terms of passenger numbers after Lae Nadzab Airport

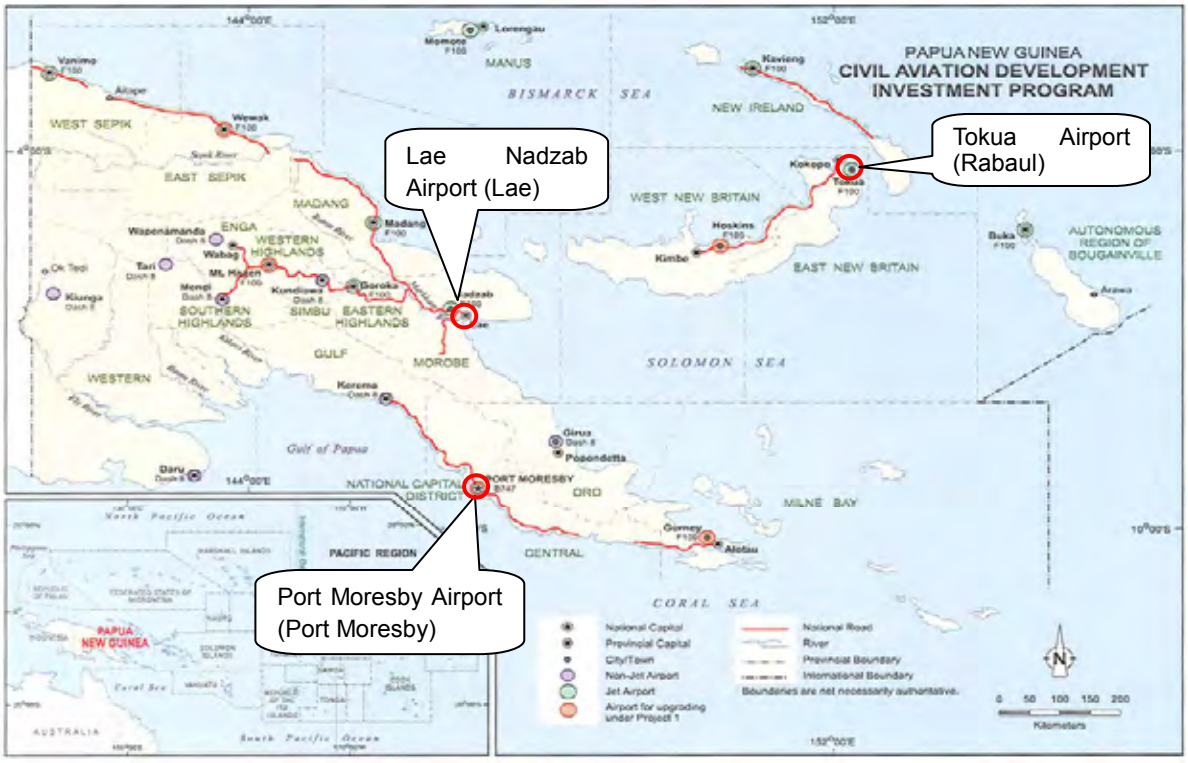


Figure 7.2.1 Airports Surveyed

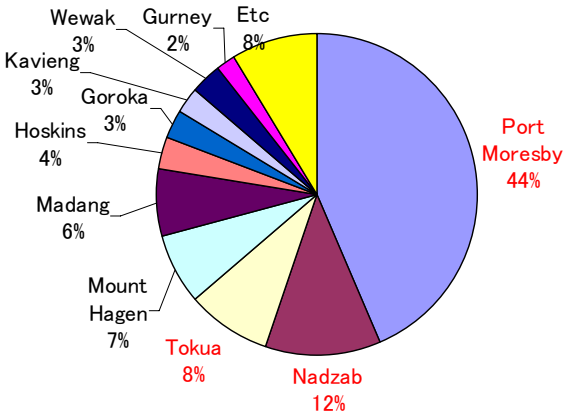


Figure 7.2.2 Share of Domestic Air Passenger Numbers in PNG by Airport

7.2.2 Survey Results

(1) Port Moresby Airport (Jackson International Airport)

Port Moresby Airport is located in the PNG capital of Port Moresby, and is the center of a network of international and domestic routes.

This airport was constructed in 1940 as a military base for the Australian air force; during the Second World War, the runway was repaired by the US military. After the end of the war, control of the airport was transferred to the civil aviation authority of PNG; the current auxiliary runway (14R/32L) was built in 1959, while the apron and parallel taxiway for B707 were constructed in 1963. Furthermore, in 1975, the main runway was constructed because aircraft were becoming larger. Subsequently, the terminal facilities were upgraded and expanded between 1988 and 2001, with aid from Japan, and the aviation security facilities were also developed and improved.

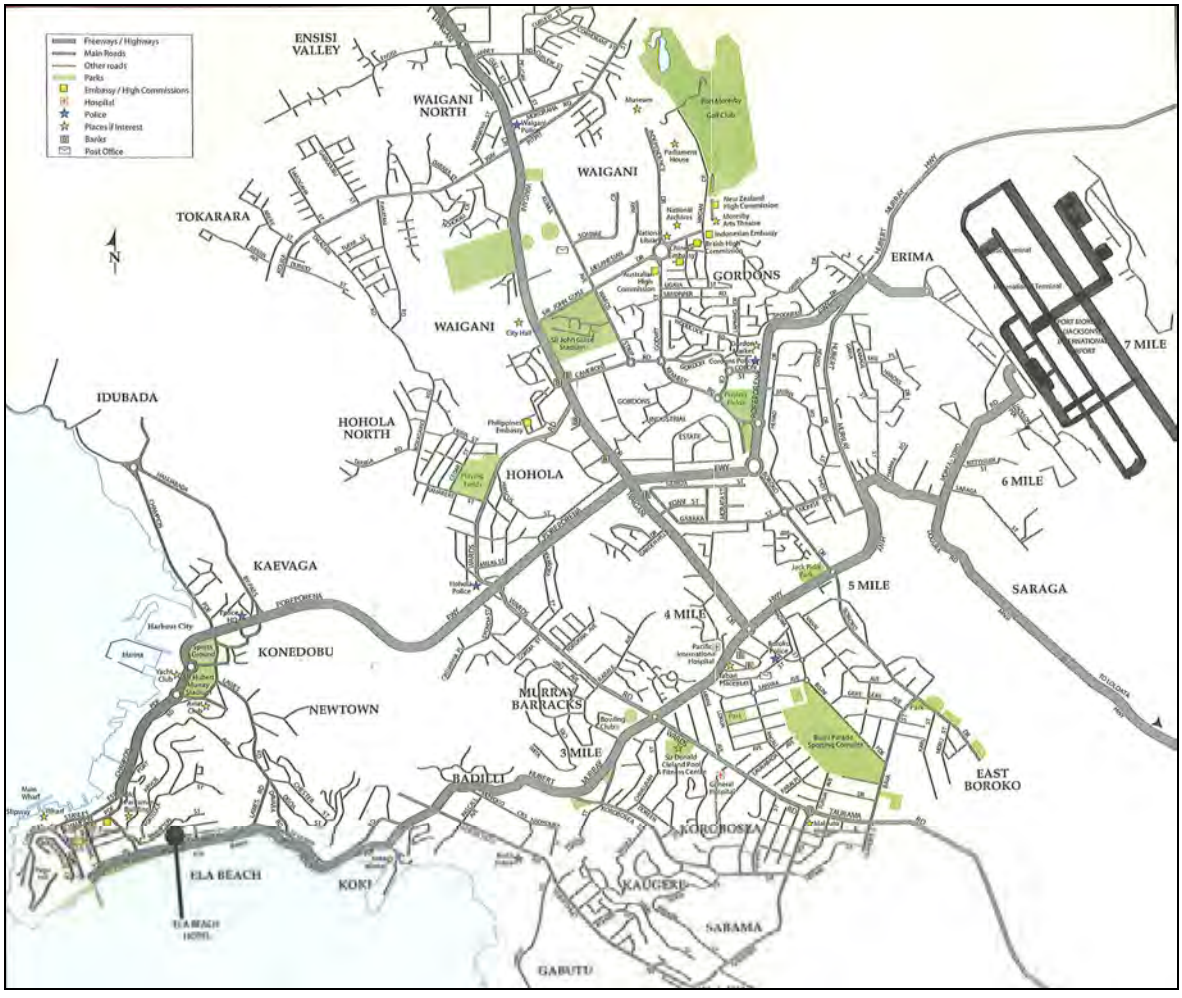


Figure 7.2.3 Diagram Showing the Position of Port Moresby Airport

At Port Moresby Airport, the main airlines operating regular scheduled services are Air Niugini and Airlines of PNG, providing direct flights to 32 airports in seven countries, including PNG itself.

An overview of Port Moresby Airport is provided in Table 7.2.2, while Figure 7.2.4 shows a ground plan of the airport.

Table 7.2.2 Overview of Port Moresby (Jackson) International Airport

Item		Details
IATA/ICAO Code		POM / AYPY
Position		09°26′36″S / 147°13′12″S
Height Above Sea Level		38.0m
Annual Passenger Numbers		Domestic routes: 738,000 people (2008) International routes: 341,000 people (2008)
Annual Number of Take-offs and Landings		Domestic routes: 28,786 times (2008) International routes: 4,264 times (2008)
Facilities	Runway	2,750m×45m Asphalt-paved (PCN70/F/C/X/U) With grooving
	Landing Strip	2870m×300m
	Apron	International route apron: 7,050m^2 Domestic route apron: 1,620m^2 Old international route apron: 32,085m^2 Old domestic route apron: 18,000m^2 Old GA* apron: 45,200m^2 New GA* apron: 38,875m^2 Cargo area: 15,000m^2
	Terminal Buildings	Domestic routes: 2,473m^2 / International routes: 2,937m^2
	Wireless Facilities	VOR/DME, NDB, VHF, ILS

*GA: General Aviation (used other than for air transport business)

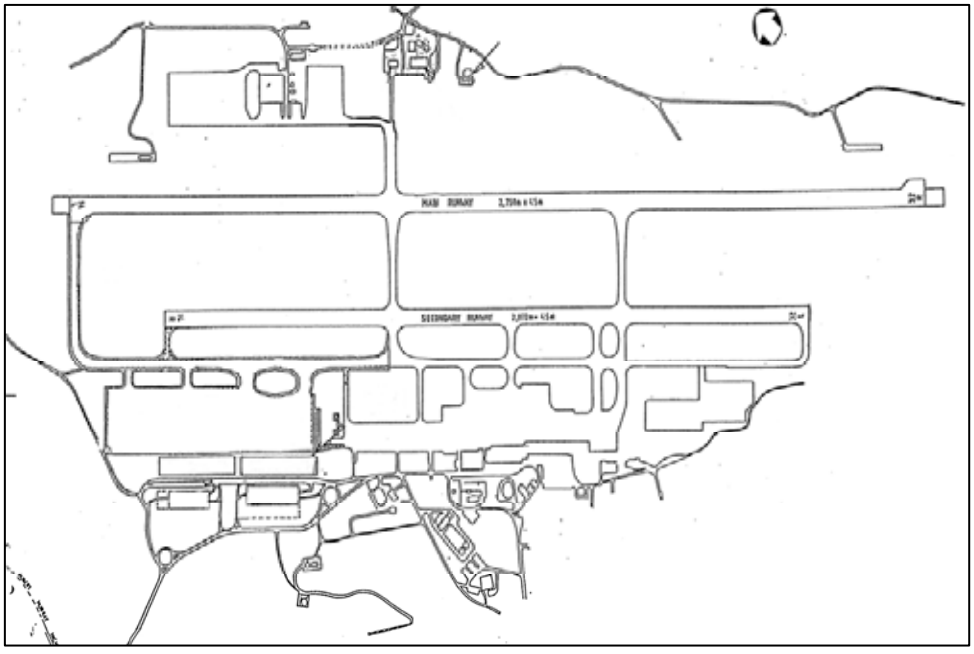


Figure 7.2.4 Basic Facilities at Port Moresby Airport

The following lists the problems with this airport, as well as future plans for it.

- As far as projects involving this airport are concerned, the ADB is currently undertaking the westward expansion of the domestic route apron as

Project 1 in CADIP. Moreover, the NAC has completed the formulation of the overall masterplan for the airport, and is planning to extend the runway to 3,500m, build a new parallel taxiway, and construct a new apron and terminal to the east of the current facilities. No target has been set for the implementation of the NAC masterplan.

- The airport has two runways: a 2,750m runway that is suitable for B747, and a 2,072m runway that is suitable for smaller aircraft (although in practice the whole length is not usually used). There are no problems with the strength and capacity of the runways in relation to the current volume of traffic and the aircraft using them; the runways, taxiways and aprons are paved and are generally in good condition.
- With regard to future demand, the NAC implementation masterplan forecasts that passenger numbers will increase by approximately 1.5 times over the next ten years, as shown in Figure 7.2.5. Even now, the terminal building and apron become crowded at peak times, so the expansion of the facilities to meet future demand will be required.

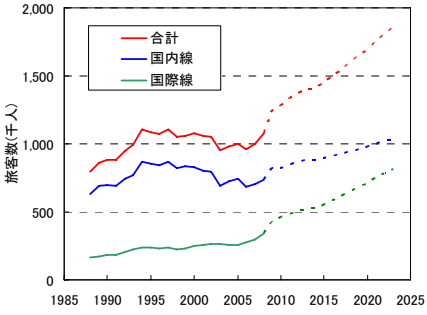


Figure 7.2.5 Forecast Demand in Terms of Passenger Numbers (Port Moresby Airport)

Number of passengers (1,000 people)
Total
Domestic Routes
International Routes

Photograph 7.2.1 Photographs Showing the Current Situation at Port Moresby (Jackson) International Airport

(2) Rabaul (Tokua) Airport

Rabaul Airport is located on the eastern side of the Gazelle Peninsula, on the island of New Britain, which is part of the territory of PNG. It is the airport serving the provincial capital of East New Britain Province and plays an important role as a hub for travel by the inhabitants of surrounding islands, as well as for the transport of everyday commodities.

The current Rabaul Airport was built with an ODA grant from Japan, as a substitute airport to replace the old Rabaul Airport, which was closed when it lost all

of its functions as an airport due to the eruption of a volcano in 1994; it began operating in 1998.

Subsequently, the airport terminal building was expanded in 2007, and in 2009 a fence was installed by the PNG government.

Figure 7.2.6 Diagram Showing the Position of Rabaul Airport

The airport is operated by 36 people: 28 from the NAC (formerly the CAA) operate the general airport facilities; 4 from the PNG ASL run air traffic control; and 2 from the National Weather Service provide weather information.

An overview of Rabaul Airport is provided in Table 7.2.3, while Figure 7.2.7 shows a ground plan of the airport.

Table 7.2.3 Overview of Rabaul (Tokua) Airport

Item		Details
IATA/ICAO Code		RAB / AYTK
Position		04°20′425″S / 152°20′425″S
Height Above Sea Level		9.0m
Annual Passenger Numbers		134,022 people (2008)
Annual Number of Take-offs and Landings		4,421 times (2008)
Facilities	Runway	1720m×30m Asphalt-paved (PCN20/F/C/Y/T) With grooving
	Landing Strip	1840m×90m
	Apron	350m×85m, three F100s can park here
	Terminal Buildings	1800m^2 (Expanded by 500m^2 from 1300m^2 in 2007)
	Wireless Facilities	VOR/DME, NDB (not currently operational)

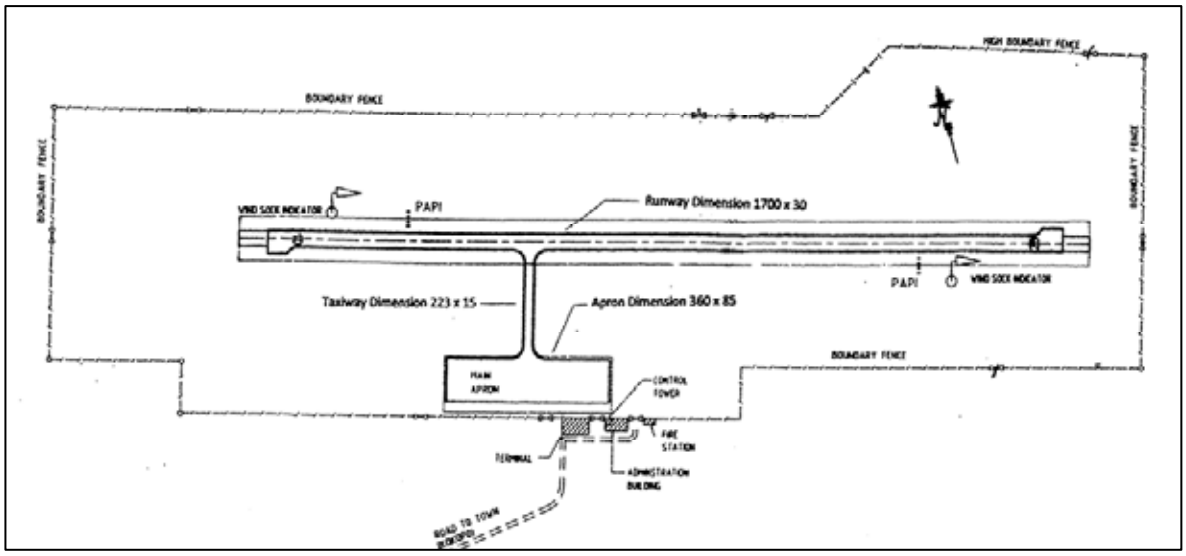


Figure 7.2.4 Ground Plan of Rabaul (Tokua) Airport

The following lists the problems with this airport, as well as future plans for it.

- The suspension of flights due to the impact of volcanic ash is a major problem. Depending on the wind direction, the airport closes about once a week between October and March, and it can be closed for up to three weeks. Recently, all flights landing in Rabaul were temporarily suspended, for 11 days between December 7 and December 17, 2009, so flights that normally go via Rabaul operated without landing there. In response to this, the PNG government is planning to build an alternative airport (Vunakanau Aerodrome) that can be used in the event of an emergency. The area where this is planned to be built is located about 30 minutes' drive southwest of Tokua Airport; the plan involves constructing an airport with a 1,200m runway that can deal with Dash8 aircraft. The NAC has completed the design of the project, but no target date has been set for construction, due to budgetary issues. The area where construction is due to take place is mostly bushland, but part of it is a residential area and a grove of coconut trees, so consideration needs to be given to society and the environment when constructing the new airport.
- With regard to civil engineering facilities at the airport, the paving of the runway is in a poor condition and cracks have appeared, which are believed to be due to the use of inferior materials and shoddy workmanship. Moreover, protrusions that are believed to be blistering have been seen near sections that have been repaired.
- The power system has become decrepit, so it is difficult to provide a sufficiently stable supply of electricity to operate the airport at present; accordingly, the introduction of a new power system is required.

- This airport is listed as ICAO category five for rescue and firefighting, which means that one rescue and firefighting vehicle is required, but the airport's current fire engine has broken down and a fire engine is brought in from the city center when required; accordingly, it would be desirable for the broken-down fire engine to be replaced as soon as possible.
- It is planned to switch to the larger B737 class of aircraft in order to respond to future demand; in order to deal with these larger aircraft, it will be necessary to increase the strength of the paving, extend the length of the runway, extend the terminal building and improve the facilities accordingly.
- With regard to the impact of the earthquake that occurred in 2000, there were fears that there would be problems with the control tower, but the survey results showed that although there are multiple cracks on the floor of the passage around the outside of the tower, on the roof, as well as a broken outer pane in the double glazing on the tower, there are no major impediments to the operation of the control tower.

Looking Towards the Terminal Building From the Runway


Aircraft Parked on the Apron

Extension of the Terminal Building

Cracks in the Paving of the Runway

After Repair of the Runway Paving

Cracks on the Walkway Around the Outside of the Control Tower

Site Where New Airport is Planned to be Built

Site Where New Airport is Planned
Some Dwellings on the Site

Photograph 7.2.2 Photographs Showing the Current Situation at Rabaul (Tokua) Airport

(3) Lae Nadzab Airport

Lae Nadzab Airport is located inland, about 32km northwest of Lae, which is the provincial capital of Morobe Province.

This airport was built by the US military during the Second World War; in 1945, when the cease-fire was declared, it was handed over to PNG and was unused for the next 30 years. In 1977, it was redeveloped as an airport providing civil aviation services.

Figure 7.2.8 Diagram Showing the Position of Lae Nadzab Airport

An overview of Lae Nadzab Airport is provided in Table 7.2.4, while Figure 7.2.9 shows a ground plan of the airport.

Table 7.2.4 Overview of Lae (Nadzab) Airport

Item		Details
IATA/ICAO Code		LAE / AYNZ
Position		06°34′11″S / 146°43′34″S
Height Above Sea Level		73.0m
Annual Passenger Numbers		185,969 people (2008)
Annual Number of Take-offs and Landings		7,714 times (2008)
Facilities	Runway	2438m×30m Asphalt-paved (PCN30/F/B/X/U) With grooving
	Landing Strip	2560m×150m
	Apron	420m×85m、200m×80m
	Terminal Buildings	3800m^2
	Wireless Facilities	VOR/DME, NDB

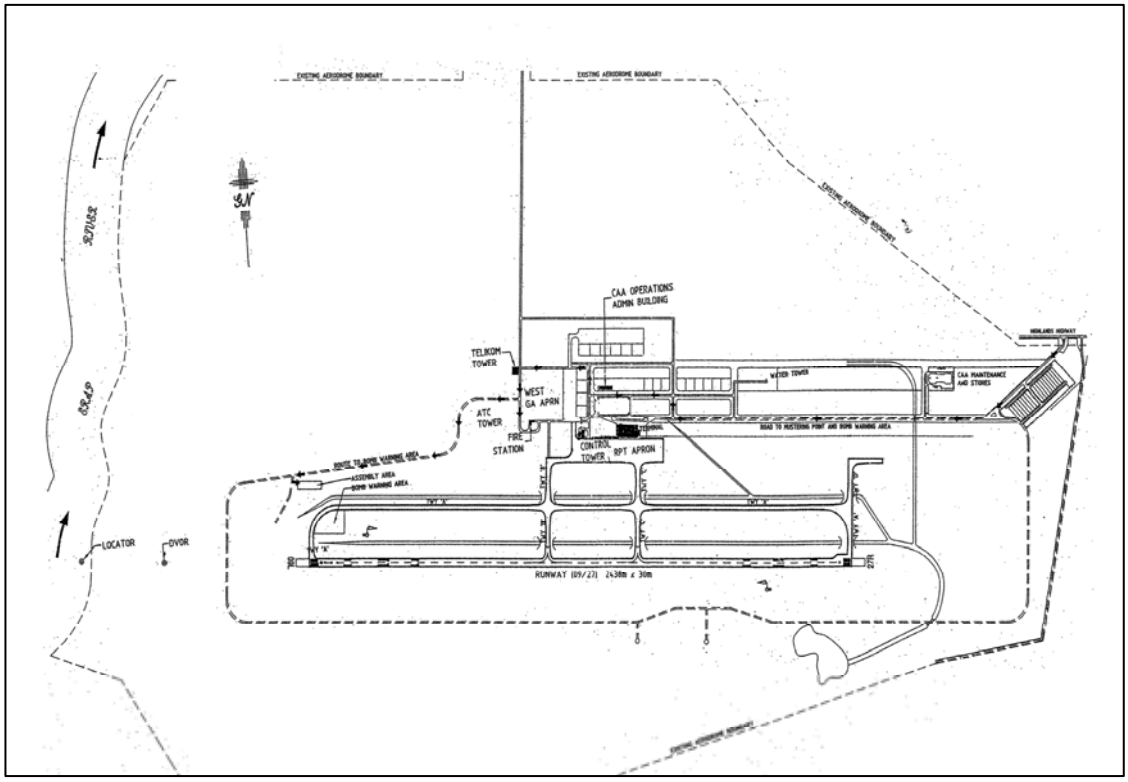


Figure 7.2.4 Ground Plan of Lae (Nadzab) Airport

The following lists the problems with this airport, as well as future plans for it.

- Work to raise the runway was carried out in 2002, but many cracks have appeared and the paving needs to be repaired.
- The terminal building has not undergone any significant repairs since the new airport was built in 1975, so it is decrepit and does not have an efficient layout; as such, one cannot deny that it is in a functionally fragile position as the airport serving PNG's second-largest city. Moreover, the capacity is insufficient to meet future demand, so it will be necessary either to build a new terminal or to renovate and extend the existing terminal. This is scheduled to be carried out as part of the ADB's CADIP project, but as the construction of a new terminal will be difficult, due to budgetary issues, the plan involves renovating the existing terminal building and relocating the various facilities.
- With regard to airport security facilities, the x-ray machines and other security equipment are inadequate, so inspection staff open up luggage to check it, which is inconvenient and uncomfortable for passengers, and also causes congestion. It would be desirable to improve security facilities so that they meet international standards.
- With regard to the pick-up of checked baggage, luggage is currently loaded onto the trucks by hand; in order to alleviate congestion and improve

convenience, it would be desirable to introduce a baggage handling system.

- There is no terminal building specifically for cargo, so the construction of a new, specialist cargo terminal building would be desirable, in order to deal with future demand.

Looking Toward the Terminal Building From the Runway

Airport Inspection Staff Opening Hand Luggage to Inspect the Contents

Picking up Checked Baggage (Baggage Claim)

Departure Lounge

Cracks in the Runway Paving

After Repair of the Runway Paving

Photograph 7.2.3 Photographs Showing the Current Situation at Lae (Nadzab) Airport

7.3 Summary

PNG has a precipitous terrain and has many undeveloped sectors, called “missing links”; in addition, its transport network is frequently cut off due to natural disasters, which has an adverse impact on economic development and the growth and strengthening of social services. Accordingly, it would be desirable to provide efficient transport services in which the three elements of the transport network – land, sea (river) and air – complement each other; among these, the aviation sector plays a crucial role as a means of transport that links cities in a short space of time and carries passengers and goods efficiently. Furthermore, PNG has many resources that have great potential as mineral resources or tourism resources, so the development of the transport network would make a great contribution to economic development; amidst this situation, the development of the aviation sector is essential.

However, if we look at the current status of the aviation sector in PNG, we can see that the development and maintenance of existing facilities is not being carried out satisfactorily, due in part to budgetary issues, and PNG relies heavily on aid from donor countries.

In particular, improving the safety and security systems at provincial airports to comply with international standards, and expanding terminal buildings and airport civil engineering facilities, such as runways and aprons, to meet future increases in aviation demand are pressing issues. Moreover, as well as major airports in provincial capitals, it is necessary to repair airfields (runways) in remote areas that are not currently used due to inadequate maintenance.

With regard to facilities, it is not possible to identify specific airports and details from this survey, but the four airports of Port Moresby, Lae Nadzab, Mount Hagen and Rabaul Tokua are positioned as important airports in the plans of the PNG government; moreover, given their positional attributes and the fact that the volume of traffic there is high, these airports are believed to have a high priority. Amidst these, work is currently being implemented at Port Moresby Airport and Mount Hagen Airport, as part of the scope of the ADB’s CADIP Project 1.

Moreover, in operating these airports, one cannot say that the technological level is adequate, so technical assistance is required; in particular, as well as implementing technical assistance projects, one efficient form of aid would be the dispatch of experts to the PNG-ASL to focus on the operation and maintenance of flight support facilities, and to the NAC to focus on the operation and maintenance of civil engineering and construction facilities, not to mention airport planning.

Document 1: Implementation Schedule

					Contents	Location
1	April	17	Sat	AM	-	-
				PM	Move To PNG	-
2	April	18	Sun	AM	Move To PNG	-
				PM	16:00 Internal meeting	JICA Office
3	April	19	Mon	AM	9:00 DNPM	
				AM	10:30 DOT-Sec./Policy,	
				PM	14:00AusAID,	
				PM	16:00 ADB	ADB Office
4	April	20	Tue	AM	8:30 DOT-Air Transport	DOT Office
				PM	Meeting with NAC	
5	April	21	Wed	AM	Meeting with NAC	Airport Office
				PM	Air Niugini	Air Niugini Office
6	April	22	Thru	AM	Meeting with NAC	Airport Office
				PM	Site Survey at POM Airport	POM Airport
7	April	23	Fri	AM	10:00 Meeting with NAC,ADB	Green House
				PM	14:00 Meeting with PNG ASL	Airport Office
					15:30 Meeting with NAC	Green House
					17:00 Meeting with Mr Serizawa	DNPM Office
8	April	24	Sat	AM	Move to Rabaul	-
				PM	Site survey at old Rabaul airport	-
9	April	25	Sun	AM	Site survey Tokua Airport	Tokua Airport
				PM	Make the report	-
10	April	26	Mon	AM	Meeting with Tokua Airport Manager Site survey Tokua Airport	Tokua Airport
				PM	Site survey Tokua Airport Site survey Airport	Tokua Airport
11	April	27	Tue	AM	Site survey Tokua Airport	Tokua Airport
				PM	Move to Lae Meeting with Taiheiyo Cement	Taiheiyo Cement
12	April	28	Wed	AM	NAC - Nadzab	Nadzab Airpor
				PM	Site survey Nadzab Airport	Nadzab Airpor
13	April	29	Thru	AM	Back to Port Moresby	-
				PM	11:00 Meeting with DOT	DOT Office
14	April	30	Fri	AM	10:00 Site Survey at Control Tower	Control Tower
					13:30 Meeting with CASA	CASA Office
				PM	Report to JICA	
15	May	1	Sat		Move to Japan	-

POM: Port Moresby
AUS: AusAID
ADB: Asian Development Bank
DNPM: Department of National Planning and Monitoring
DOT: Department of Transport,
NAC：National Airport Corporation

Document 2: Contact People

Participating Agencies	Name	Position
DNPM		
DOT	Philip Tek Habon	Deputy Secretary
	Koni Pombo	First Assistant Secretary
DOT Air	William Vate	First Assistant Secretary
	Raka Jakson Morea	Acting Manager Aviation Statistics
National Airports Corporation	Manuai Kametan	Project Manager
	Andrew Goodwin	
	Joseph Tupiri	General Manager Commercial & Strategic Planning
	Sylvester Kenatsi	General Manager POM Airport
	Philip Pakop	General Manager Other Airport
PNG Air Services Ltd	Ted Paki	Managing Director/CEO
	Tarcisius Bola	Chief Operating Officer
	Gabriel Salayau	Executive Manager Air Traffic Service
PNG Civil Aviation Safety Authority	Wilson Sagati	CEO
	John Bromley	Chief Operating Officer
Air Niugini	Colin Lyttle	General Manager Marketing
	John Cappelletti	General Manager Operations
	Cpt Daniel Wanma	General Manager flight Operations
	Marco Maconnel	POM Airport Operations Manager
ADB	Charles Andrews	Country Director
	Allan Lee	Deputy Head
	Douglas Lucius	Transport Specialist
AusAID	William Hillton	Second Secretary
	Ian Hayden Smart	Strategic Management & Business Development Adviser
	Patrick Mannix	Road Construction Engineer Advisor
Tokua Airport	Lazarus Tuam	Airport Manager
Nadzad Airport	Mark Sahin	Airport Manager

Document 3: List of Documents Gathered

A	Transport Development Plan	Source	Remarks
A-1	National Transport Development Plan 2006-2010 Infrastructure Investment Program	DNPM	
A-2	National Transport Development Plan 2006-2010 Infrastructure Improvement, Institutional and Legislative Reforms	DNPM	
A-3	Review of National Transport Development Plan 2006-2010	DNPM	
A-4	PAPU NEWGUINEA Department Strategic Plan 2010-2030（March 2010）	DNPM	
A-5	Country Strategy and Program Midterm Review Papua New Guinea 2006–2010 (July 2009)	ADB	
A-6	Department of Transport Preparation of The national Transport Strategy Record of The 1st Consultative Workshop Held at HOLIDAY INN, Port Moresby (February 2010)	DOT	
B	**Civil Aviation Plan and Airport Development Projects**	**Source**	**Remarks**
B-1	Master Plan of Port Moresby International Airport (JACOBS, March 2010)	NAC	
B-2	National Airports Strategic Management Plan (1/3) Strategic Management Plan(2009-2018)（CAA, December 2009）	NAC	
B-3	National Airports Strategic Management Plan (2/3) Analysis and Findings（CAA, December 2009）	NAC	
B-4	National Airports Strategic Management Plan (3/3) Supporting Data and Financial Projections（CAA, December 2009）	NAC	
B-5	Operating Manual for Financial Model (KPMG,CAA, December 2009)	NAC	
B-6	Report and Recommendation of the President to the Board of Directors Proposed Multitranche Financing Facility Papua New Guinea: Civil Aviation Development Investment Program（October 2009）	ADB	
B-7	Presentation PPT of CADIP CIVIL AVIATION DEVELOPMENT INVESTMENT PROGRAM 2009 - 2018	NAC,ADB	
B-8	National Airport Strategic Management Plan Draft Report (November 2009)	CAA	
B-9	Draft Master Planning Options Port Moresby International Airport (JACOBS, September 2009)	CAA	
B-10	Draft Nadzab (LAE) Airport Master Plan 2009-2030 (November, 2009)	CAA	
B-11	Draft Mt Hagen Kagamuga Airport Master Plan 2009-2030 (November, 2009)	CAA	
B-12	Tokua (RAB) Airport Master Plan 2009-2030 (November, 2009)	CAA	
C	**Air Traffic Data and Forecasts**	**Source**	**Remarks**
C-1	Time Schedule of Air Niugini	Air Niugini	
C-2	Time Schedule of Airline PNG	Airline PNG	
D	**Tokua　Airport**	**Source**	**Remarks**
D-1	Organization chart	NAC	
D-2	Layout of Airport	NAC	
D-3	Major Issues Affecting Tokua Airport	NAC	
D-4	Vunakanau Aerodrome Drawing	CAA	
E	**Nadzab　Airport**	**Source**	**Remarks**
E-1	Layout of Airport and Terminal Building	NAC	

8. Local Briefing Session

The objective of this survey was to provide basic information on which implementing organizations could work as a priority, by conducting a comparative study of the roads, ports and airports that form the transport sector in PNG, by means of field surveys. Through discussions with implementing organizations, JICA's local office in PNG and donors, the survey team provided a summary of the future direction of cooperation in the transport sector, using loan assistance, grant aid and technical assistance. This briefing session provided an opportunity for the study team that conducted the field surveys to report on their observations from an engineer's perspective.

Venue: Hideaway Hotel
Date & Time: 10:00 – 12:00, August 3
Agenda:

i) Observations gleaned from the results of the survey from an engineer's perspective.
ii) Opinions of participants regarding future prospects in each sector.

Concept paper

The Point of the Briefing Session

July 20, 2010
Japan International Cooperation Agency

1. Outline

The Pacific Islands Forum was held on May 2009 hosted by the government of Japan to enhance the Japanese cooperation to the Pacific region. Japan raised the cooperation to infrastructure sector in the region and JICA follows the policy to PNG and carried out the survey on transport sector regarding road, port and civil aviation.

We had a series of interviews to the official concerned of the Government of PNG, and the donors and site survey. As a result, we would like to have the briefing session to share the information and the idea among us.

The content of the briefing session is as follows.

1) Idea from the engineering point of view
2) Opinion exchange with PNG and donors

2. Attendance

ADB, AusAid, PNG (DOW, DOT), Port Agency

3. Date: 3rd Aug (AM) 10:30 - 12:30

4. Place

Under the selection

5. Program

1. Introduction
2. The report for each sector
   -Road sector
   -Port sector
   -Civil aviation sector
3. Opinion exchange

Ends

Annex 1 Documentation for the session

Task obtained from site survey and one consideration for solution

JICA survey team

Japan International Cooperation Agency

Existing Condition and Future Development of Road Infrastructure in Papua New Guinea

1. Transportation Sector Survey in PNG

It is urgent to develop the infrastructure for traffic system to improve the economic development and the social service delivery in Papua New Guinea especially land traffic and road network for land transportation at local areas. Land configuration of PNG is harsh and Road network of PNG is quite inefficiency because it has lot of missing link. Moreover, close down of roads caused by disaster including heavy rain, flood and land slide give serious influence to the lives of local residence frequently. JICA dispatch the Transportation Sector Study Team to the PNG to conduct survey for transportation infrastructure mainly focus on the development plan and maintenance plan of road and bridge.

Japan International Cooperation Agency

2. Study Area

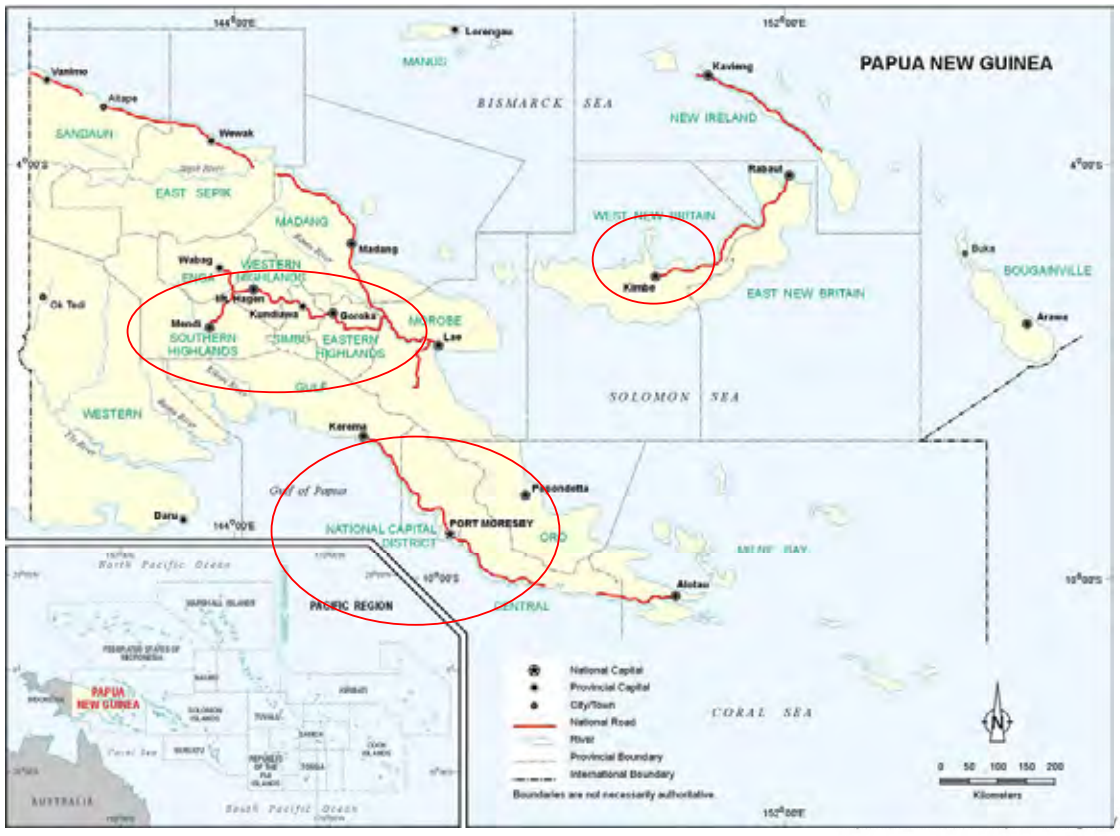


Table-1 List of the investigated Road

	Route	Description
1	Port Moresby-Kupiano	A part of the road of the economic corridor connecting the Coral sea and the Solomon sea
2	Port Moresby-Malalaua	Part of the road of Trans Island Highway connecting Lae and Port Moresby
3	Port Moresby-Tapini	Part of the road of Trans Island Highway connecting Lae and Port Moresby
4	Lae- Wau	Part of the road of Trans Island Highway connecting Lae and Port Moresby
5	Lae-Mt.Hagen	The road is connecting the most vital economic area of Highland and the Port Lae.
6	Kimbe-Bialla	The Area is economically activated by Oil Palm and a part of trunk road connecting Rabaul and Kimbe

3. Existing Road Condition in PNG

3.1 Traffic Accident in Wau Road