

3.2 The avalanche of Earth and Rock

3.2.1 Disaster at Mumeng

(1) Sign board to show the direction to the School



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(2) Existing Mumeng under the earth and Rock



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(3) Effort to keep traffic at Mumeng



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3.2.2 Close down of Highland Highway

(1) Debris on the highland highway



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(2) Maintenance work to open the road.



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3.3 Slope erosion



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3.4 Slope erosion combined by the land slide and avalanche of earth



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3.5 Massive land slide at Chimbu



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3.5 Failure of a Colgate pipe culvert



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4. Fragile River Crossing Facilities

4.1 Failure of a causeway (Bougainville)



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4.2 Colgate pipe culvert



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4.3 Collapse of a Temporary Bailey Bridge



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4.4 Temporary Bailey Bridge at River



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4.5 Reconstruction of Temporary bridge



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5. Development of Sustainable Road Infrastructures

From Vulnerable road Infrastructure to substantial road infrastructure

Two big issues for the development of sustainable road infrastructure in PNG are as follows:

- 1) Slope protection for the road in a mountainous area.
- 2) Establishment of the construction industry for road infrastructure.

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5.1 Slope protection at mountainous areas

5.1.1 Erosion Control by debris barrier

(1) Perspective of Debris Barrier



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(2) Debris Barrier



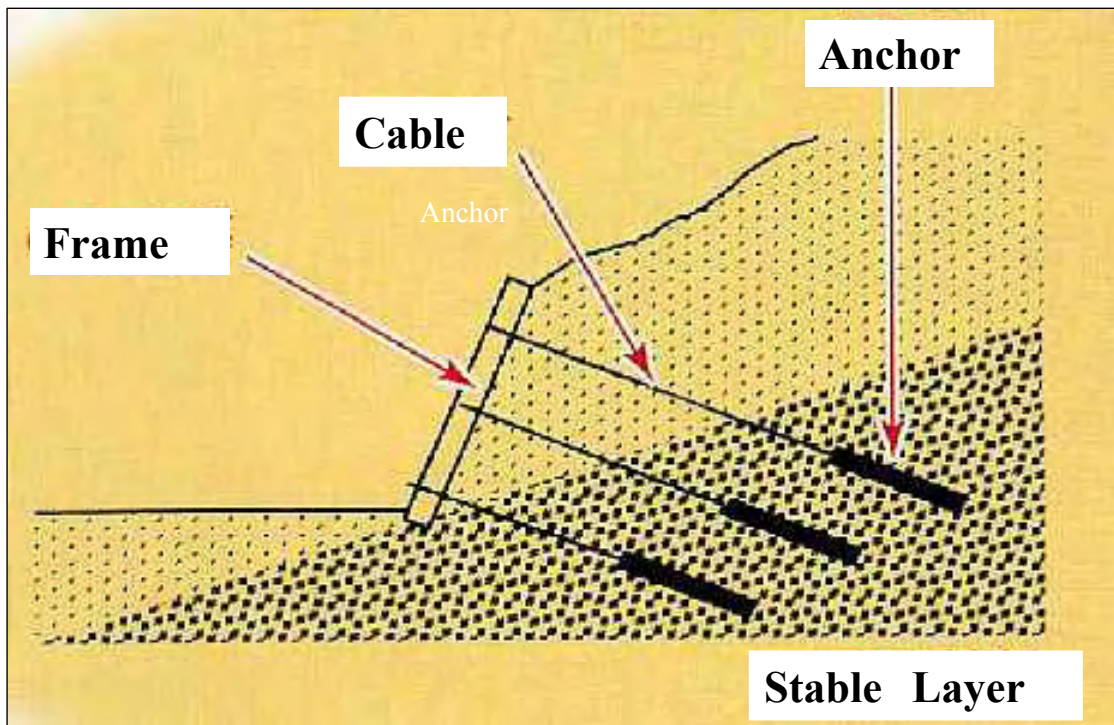
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5.1.2 Slope Protection by wire net



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5.1.3 Slope Protection (Anchor Method)



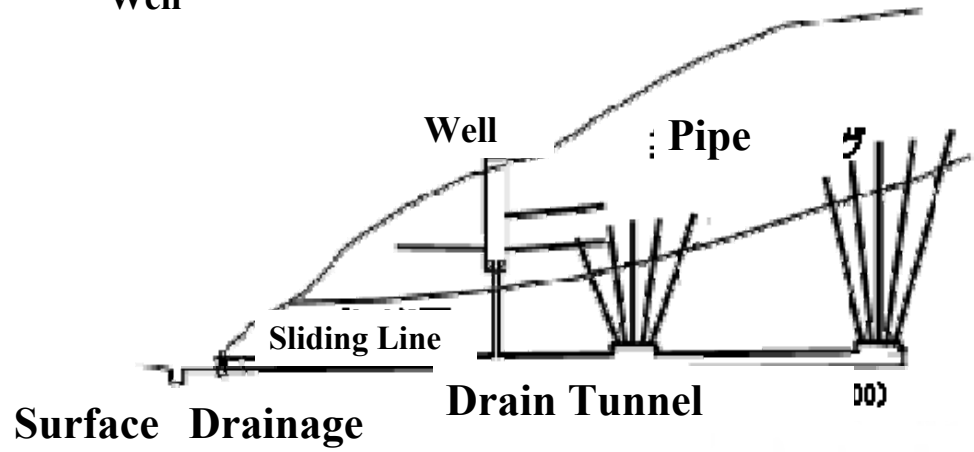
5.1.4 Slope Protection by anchor and frame



5.1.5 Land Slide Protection by Well and Drainage



Well



5.1.6 Falling Rock Shelter



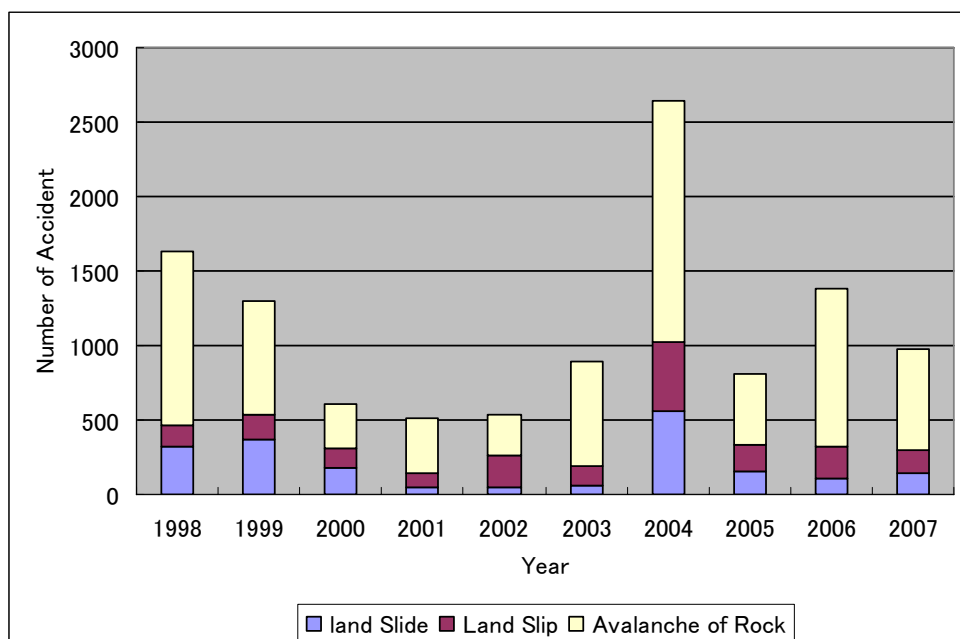
5.1.7 Bank protection against a erosion



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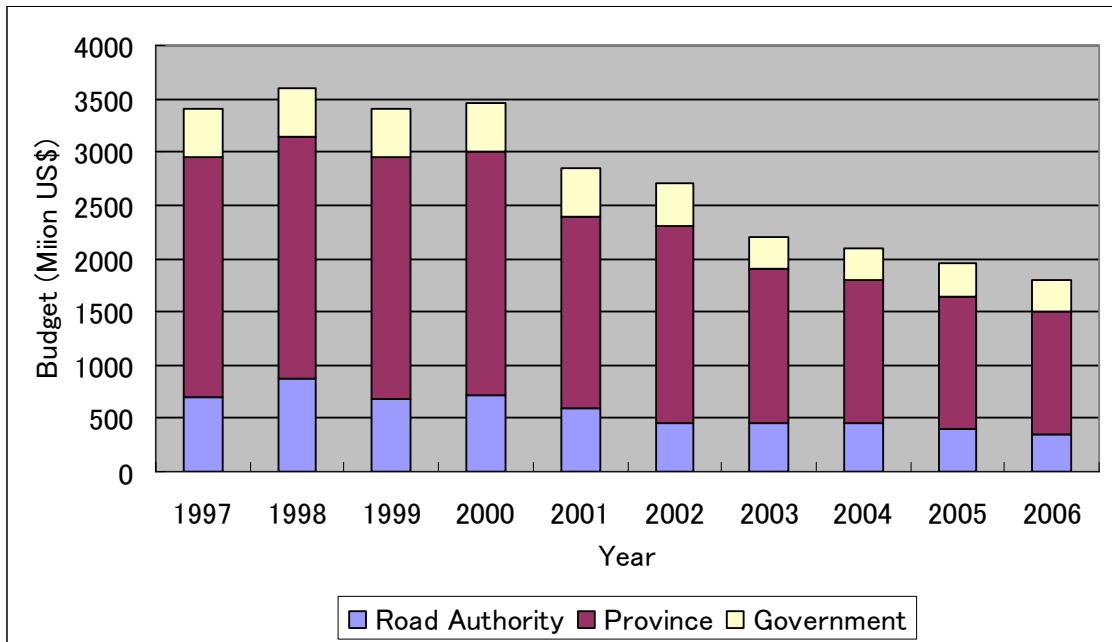
5.2 Circumstance in Japan

(1) Number of disaster by earth failure in Japan



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(2) Budget for the slope protection in Japan



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5.3 Establishment of construction industry in PNG

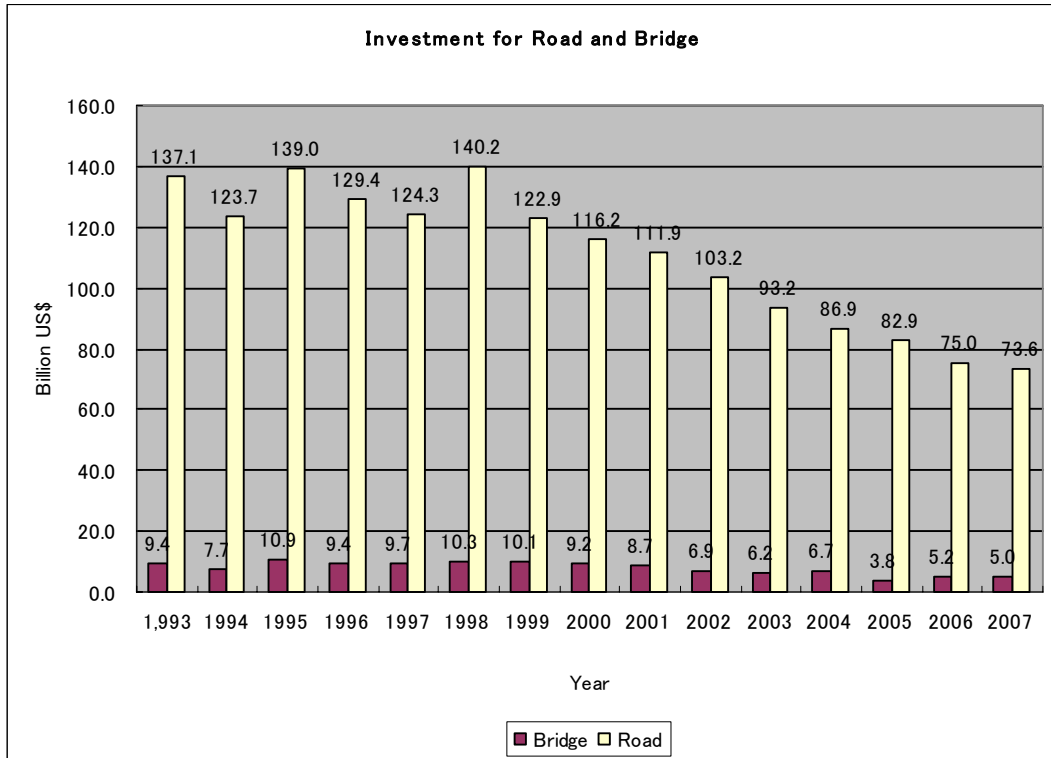
5.3.1 Bridge Construction Industry

Construction industry is the fundamental industry for the development of a country and it create many employment and market for large volume of local material. The developing countries shall start a practicable industries such as construction industries.

Lack of sufficient construction company is one of big issue for the development of road infrastructure in PNG. Bridge is one of most important infrastructure for road and establishment of bridge construction technology is indispensable for the development of road network in PNG

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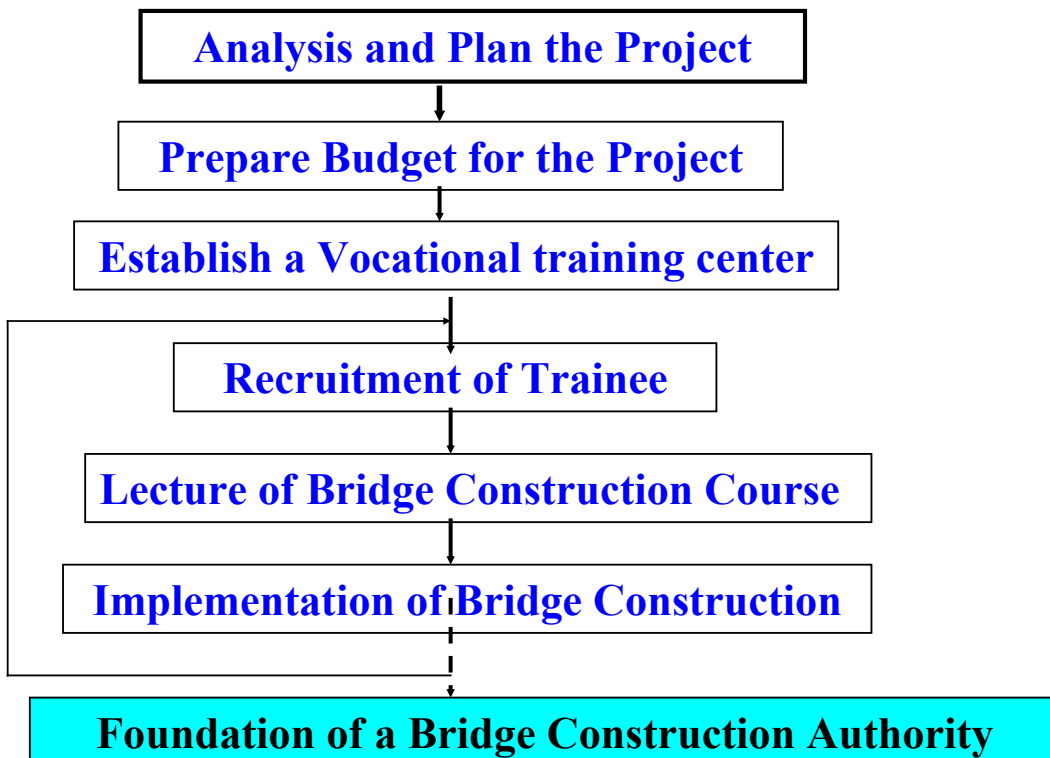
5.3.2 Amount of order received for bridge construction



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5.4 Establishment of Bridge Construction Authority

5.4.1 Flow to establish the construction industry



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5.4.2 Scope of the project

Analysis and Plan the Project	Scope of the Project. Estimate cost
Prepare Budget	Negotiation with Funding agencies
Establish a Vocational training center	Establish lecturer team, Prepare training room, facilities, equipment
Recruitment of Trainee	Recruit from university
Lecture bridge Construction Course	Topographic survey, geological survey, bridge design, construction material
Implementation of bridge Construction	Select construction site, prepare equipment for construction
Foundation of a bridge Construction Authority	Establishment of construction authority or company

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5.5 Construction Industry in Developing Countries

(1) Manufacture of Pre-stressed concrete girder in Laos



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(2) Factory of Pre-stressed concrete girder in Sri Lanka



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(3) Construction of bridge by local contractor in Cambodia



(4) Bridge constructed by local contractor in Indonesia

Construction of Flyover in Jakarta in 1990



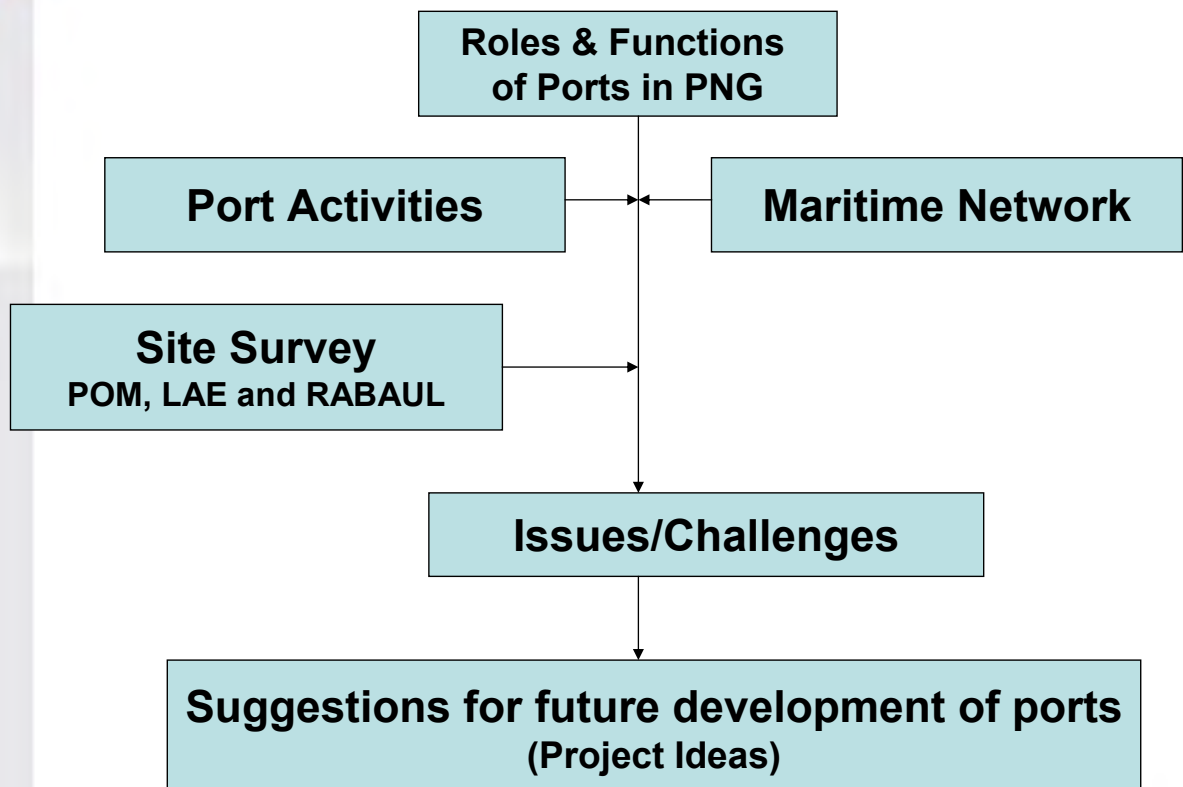
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Thank You

Task obtained from site survey and one consideration for solution

JICA survey team
(Port Sector)

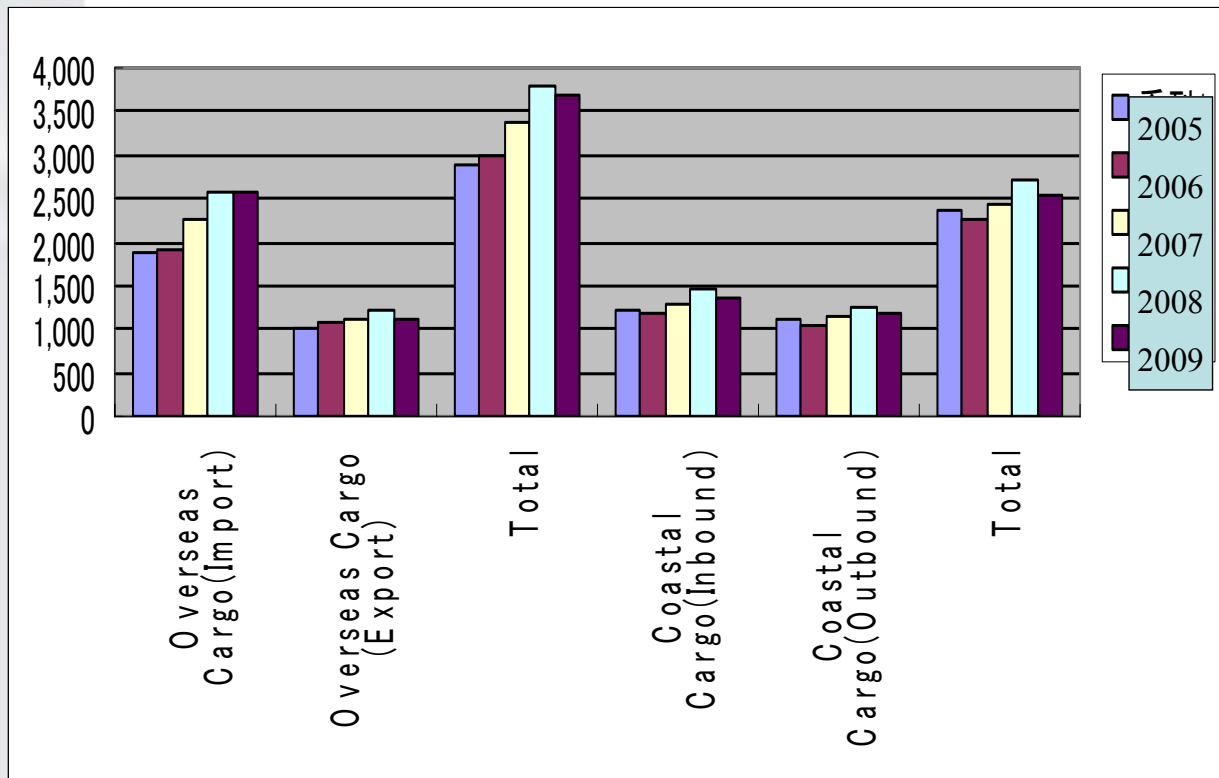
Outline of the Study



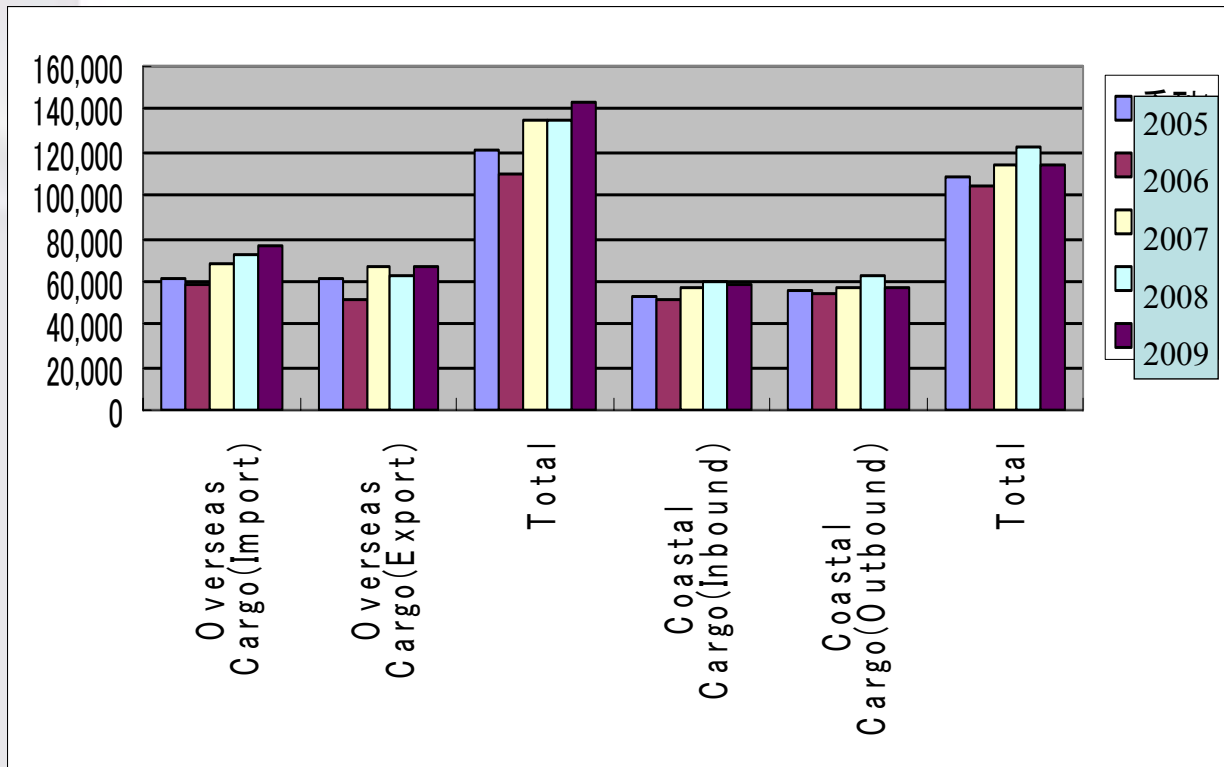
NETWORK of the DECLARED PORTS



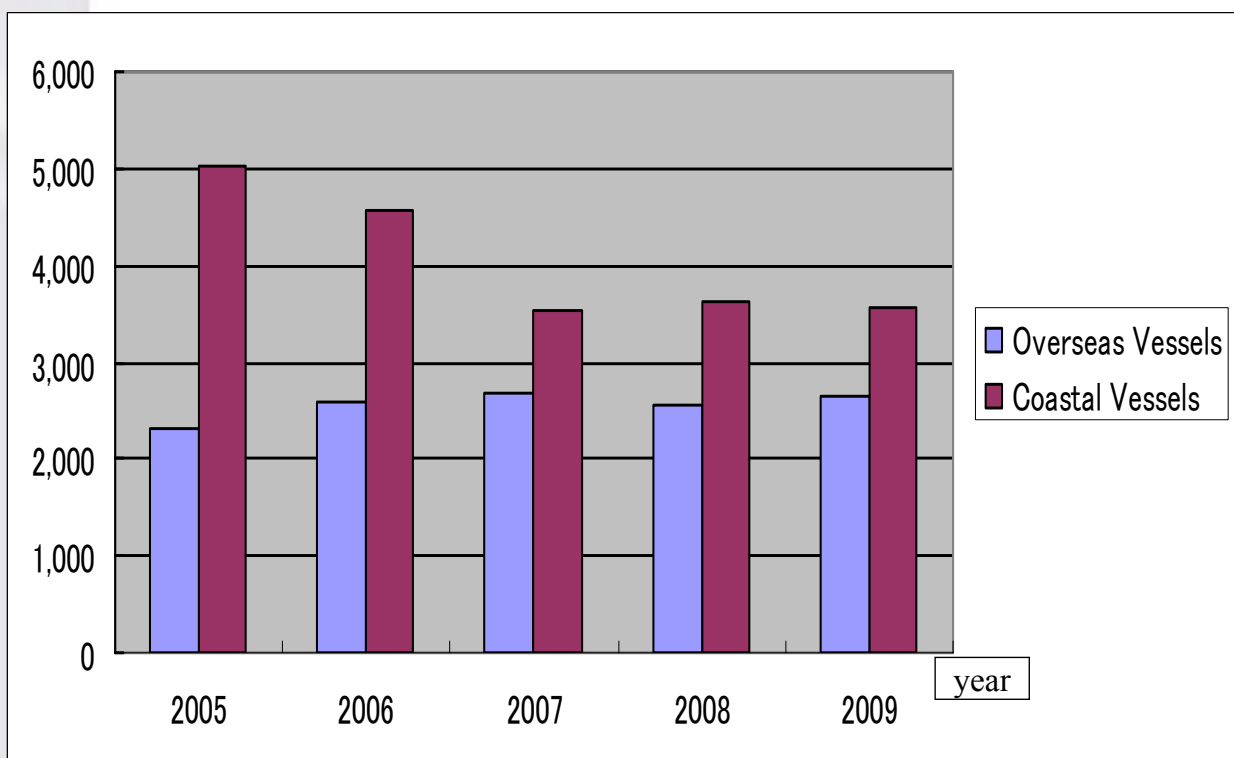
Total Cargo Throughput of the Declared Ports



Total Container Throughput of the Declared Ports



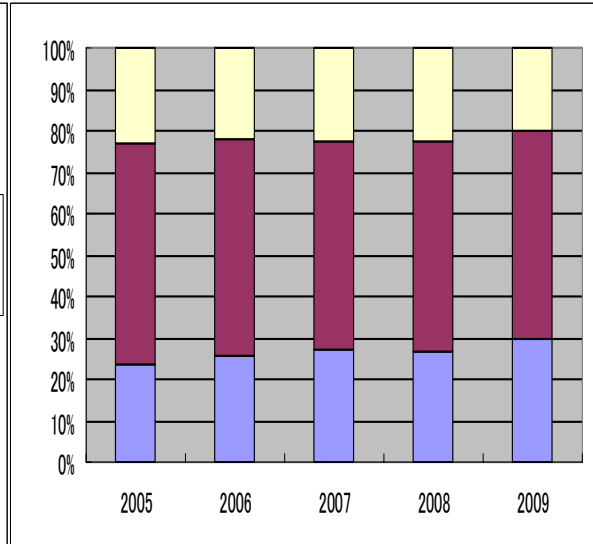
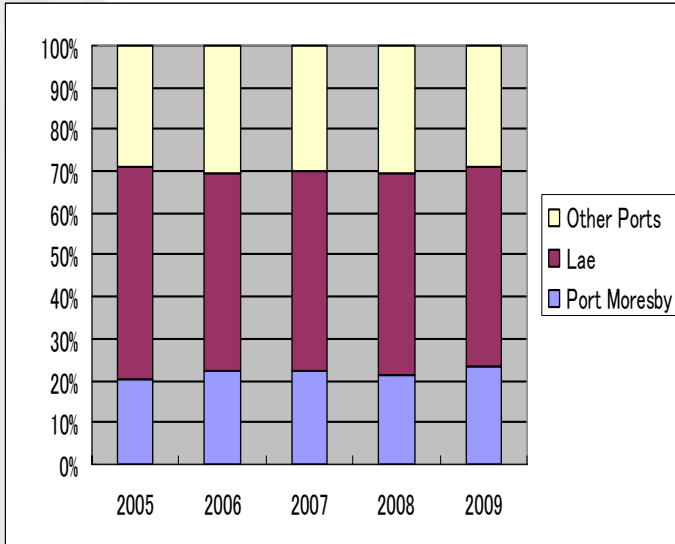
Total Vessel Calls of the Declared Ports



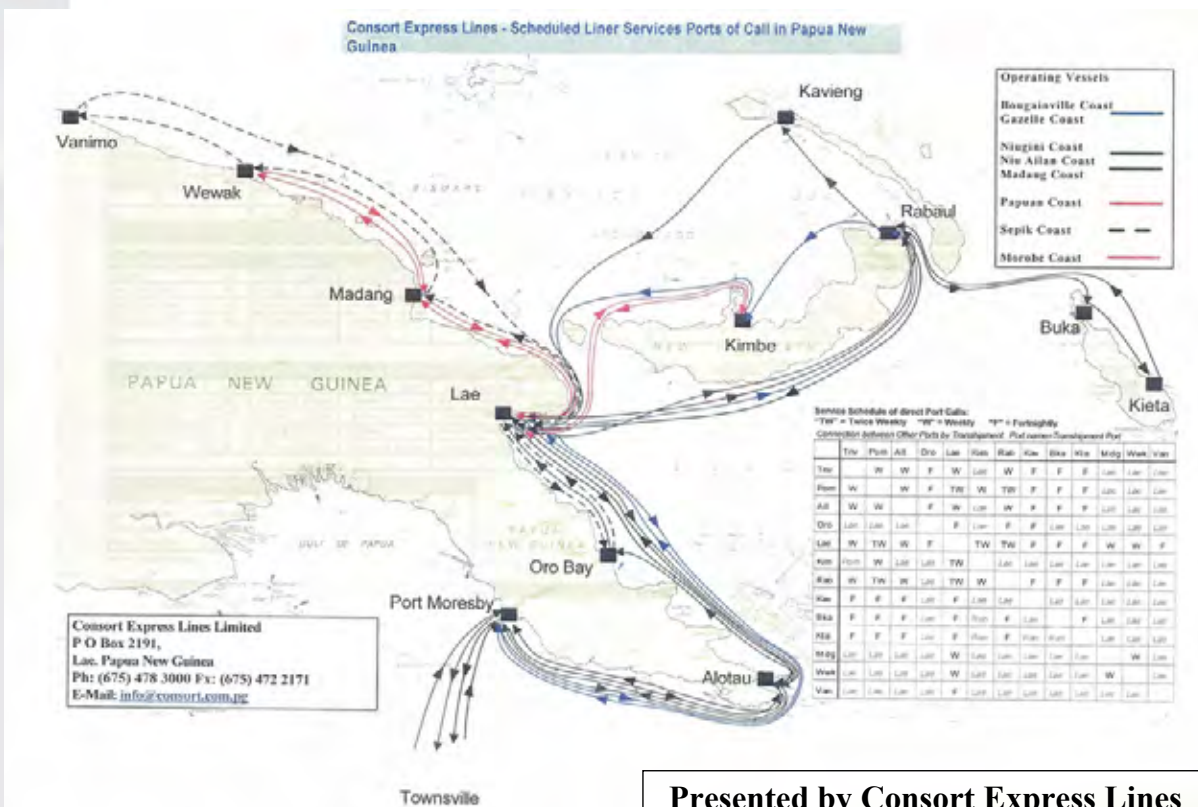
Ratio of Lae & Port Moresby

Ratio of Cargo Throughput

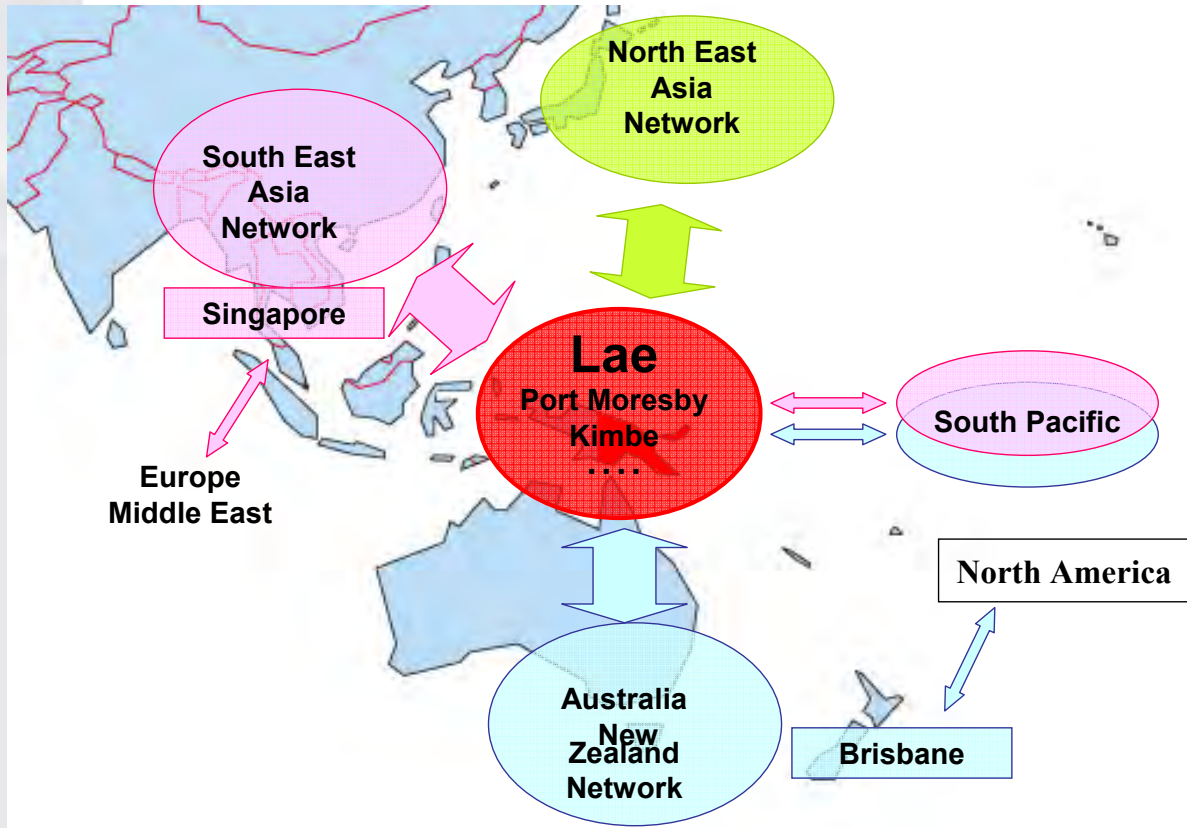
Ratio of Container Throughput



Domestic Liner Service Network



International Shipping Network



Port Moresby Port –(1)



Narrow space is not suitable for expansion



Deteriorated to a substantial extent

Port Moresby Port – (2)



Narrow space for containers



Lack of quay crane hampers efficient operation

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Port Moresby Port – (3)



Many vessels waiting



Heavy duty vehicles & ordinary traffic use the same road

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Lae Port – (1)



Yard space are fully occupied

Shortage of Mooring facilities



Lae Port – (2)



Some facilities have been damaged

Berth 1 seems to be in poor condition

Standard Productivities of Terminals

Feeder Ports - quay gantry crane - one berth	20-25 units/hour* 40-50 units/hour*
Multi Purpose Berth General Cargo Berth (relatively small scale)	20 units/hour* or less
Lae Port	8-15 units/hour**
Port Moresby Port	8-10 units/hour**

*: Data From ODDI

** : Hearing from PNG-PCL

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Rabaul Port – (1)



Corrosion seems to b

Inconvenient for handling containers

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Rabaul Port – (2)



Pavement condition is

Private owned berth for ferry shipping

Issues/Challenges

(In terms of Port Facilities)

- 1. Outdated Facilities for Containerization**
 - inefficient port operation
- 2. Shortage of Port Facilities**
 - congestion within/outside port
- 3. Deterioration of Port Facilities**
 - restriction on use of port facilities
- 4. Lack of Master Plans**
 - projects to be given priority are unclear and lack of properly planned development under financial constraint

Project Idea - POM

To cope with increasing container cargo and function as a gateway port of the capital:

- **Rearrangement and Expansion of the Container Terminal**
- **Redevelopment of the Main Wharf**
- **Improvement of Operational Efficiency**
- **Separation of Port Traffic from Ordinal Traffic**
- **Other projects necessary for the future**



- **Formulation of a Master Plan is required**
(including consideration of relocation plan)

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Project Idea – Lae Port

To function as an int'l and domestic gateway

- **Rearrangement and Expansion of Container Berths, Container Yard, etc.**
- **Reconstruction of Berth 1**
- **Improvement of Operational Efficiency**
- **Co-finance in the field of super-structure with ABD Project**
- **Other projects necessary for the future**



- **Formulation of a Master Plan is required**

It may be an ideal time to invest heavily in Lae Port.

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Project Idea – All the Declared Ports

- To resolve the Issues/Challenges, “**The Study on the Nation-wide Port Development & Improvement Strategy in PNG Ports**” should be implemented.

(including examination of facilities’ soundness, formulation urgent rehabilitation projects and formulation of master plans)

- One of the Outputs of the Study is to identify Possible Assistance Projects.

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THANK YOU
for
YOUR ATTENTION

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