

TIMOR-LESTE

Administração dos Portos de Timor Leste (APORTIL)

**DATA COLLECTION STUDY
ON
THE PORT SECTOR
IN
TIMOR-LESTE

FINAL REPORT**

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Abbreviations

ADB	Asian Development Bank
ADN	National Development Agency
APORTIL	Administração dos Portos de Timor-Leste
BoQ	Bill of Quantities
BOR	Berth Occupancy Rate
CAFi	Board of the Infrastructure Fund
CCTV	Closed-Circuit Television
CFS	Container Freight Station
CoM	Council of Ministers
CY	Container Yard
D/O	Delivery Order
DAC	Development Assistance Committee
DBOT	Design-Build-Operate-Transfer
DD	Detail Design
DNTM	National Directorate of Maritime Transport
DWT	Dead Weight Tonnage
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EOI	Expression of Interest
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRT	Gross Tonnage
IDA	International Development Association
IFC	International Finance Corporation
IMF	International Monetary Fund
IMO	International Maritime Organization
ISPS Code	International Ship and Port Facility Security Code
KFW	Kreditanstalt für Wiederaufbau
LOA	Length Over All
MPS	Major Projects Secretariat
MTC	Ministry of Transport and Communications
NPC	National Procurement Committee
ODA	Official Development Assistance
PFSA	Port Facility Security Assessment
PFSP	Port Facility Security Plan
PPP	Public Private Partnership

RORO ship	Roll-on/Roll-off ship
SDP	Strategic Development Plan
SOLAS	Safety of Life at Sea
SOP	Standard Operation Procedure
TEU	Twenty-foot Equivalent Unit
ToR	Terms of Reference
UNMIT	United Nations Integrated Mission in Timor-Leste
UNTAET	United Nations Transitional Administration in East Timor
USCG	United States Coast Guard
USD/US\$	United States Dollar

Contents

ABSTRACT

0. Outline of the Study	I
1. Basic Data	I
2. Existing Capacity of Dili Port	VI
3. Traffic Projection.....	VI
4. Institutional Issues to be Addressed	VIII
5. Identification of Facilities in Need of Urgent Upgrades	VIII
6. Improvement of the Port Operation.....	IX
7. Port Security Measures.....	X
8. Future Plan of Dili Port	XI

FULL TEXT

0. Outline of the Study	1
0.1. Background of the Study	1
0.2. Objectives of the Study.....	1
0.3. Target Area	1
1. Basic Data	2
1.1. Socioeconomic Conditions	2
1.1.1. Socioeconomic Conditions of Timor-Leste	2
1.1.2. Government Policy on Port Development.....	6
1.1.3. Donors' Support for the Port Sector	11
1.2. Present Conditions and Records of Upgrades of Facilities in the Port of Dili	12
1.2.1. Wharves, Aprons, Yard Area, and Storage Facilities.....	12
1.2.2. Port Roads and Passenger Terminal	19
1.2.3. Port Administration Facilities.....	21
1.2.4. Channels, Basins, and Navigational Aids.....	22
1.2.5. Cargo Handling Equipment	23
1.3. Operation of the Port of Dili.....	24
1.3.1. Wharves.....	24
1.3.2. Other Facilities	26
1.4. Port Performance	28
1.4.1. Cargo Traffic.....	28
1.4.2. Passenger Traffic	29
1.5. Port Management.....	30
1.5.1. Institutional Arrangement	30

1.5.2.	Stevedoring.....	32
1.5.3.	Maintenance of Equipment and Infrastructure	32
1.5.4.	Environmental Considerations	33
1.6.	Port Security	34
1.6.1.	Facilities and Equipment	34
1.6.2.	Institutional Arrangements	38
1.7.	Port Safety	40
1.7.1.	Accident Records.....	40
1.7.2.	Safety Measures.....	40
1.8.	Tibar New Port Project.....	41
1.8.1.	Outline of the Development Concept.....	41
1.8.2.	Progress of the Project.....	42
2.	Existing Capacity of Dili Port	47
2.1.	sQuay-side Capacity	47
2.2.	Yard Capacity	49
3.	Traffic Projection.....	51
3.1.	Cargo Traffic.....	51
3.1.1.	Containers.....	51
3.1.2.	General cargo.....	53
3.2.	Ferry Passenger Traffic.....	53
4.	Institutional Issues to be Addressed	55
4.1.	Port Management.....	55
4.1.1.	Budgetary System in Timor-Leste.....	55
4.1.2.	Budget Use in APORTIL.....	59
4.1.3.	Organization	60
4.2.	Maintenance	62
4.2.1.	Personal assignment of organization	62
4.2.2.	Maintenance work	63
5.	Identification of Facilities in Need of Urgent Upgrades	67
5.1.	Identification of Deteriorated Facilities.....	67
5.2.	Prioritization of Facilities to be Upgraded and Additional Survey.....	67
5.3.	Relocation of Ferry Facility.....	68
5.4.	Facility Rehabilitation Plan	72
6.	Improvement of the Port Operation.....	73
6.1.	Cargo Traffic.....	73
6.1.1.	Quay-side.....	73
6.1.2.	Yard-side.....	74
6.1.3.	Recommendations of the Chamber of Commerce and Industry of Timor-Leste.....	74
6.1.4.	Implementation of Countermeasures.....	75
6.2.	Passenger Traffic	77

7. Port Security Measures.....	80
7.1. Institutional Arrangements	80
7.2. Facility and Equipment Requirement	80
8. Future Plan of Dili Port	83
8.1. Impacts of the Tibar New Port Project	83
8.2. Dili Port after the Port Functions Relocation	83
 Reference: Partnership with ASEAN on Transport Sector	 R-1

List of Figures

Figure 1.1-1 Annual Petroleum Revenue (above) and Total Revenue of Government (below).....	2
Figure 1.1-2 Population of Timor-Leste and Estimation by United Nations.....	3
Figure 1.1-3 Changes in Oil GDP and Non-Oil GDP	3
Figure 1.1-4 GDP percent change (constant price) of Timor-Leste and Estimation by IMF (2011-2018).....	4
Figure 1.1-5 GDP (constant price), GDP per capita of Timor-Leste and Estimation by IMF (2011-2018).....	4
Figure 1.1-6 Major Trading Partners: Import (left) and Export (right)	5
Figure 1.1-7 Tibar Port Development Plan in SDP	7
Figure 1.1-8 Major Ports in Timor-Leste.....	8
Figure 1.1-9 Map of Tasi Mane Project.....	8
Figure 1.1-10 Kairabera Port.....	9
Figure 1.1-11 Com Port.....	9
Figure 1.2-1 Mooring Facilities of Dili Port	13
Figure 1.2-2 Landing of Ferry and Berthing of Cargo Ship.....	13
Figure 1.2-3 Layout of Cargo Handling Facilities and Open Area behind of Berth BL4 and BL514	
Figure 1.2-4 Yard Layout of Dili Port	15
Figure 1.2-5 Deterioration Area of Pavement and Cave-in Point.....	16
Figure 1.2-6 Improvement Area of ICB Pavement has begun at West Side of the Yard	16
Figure 1.2-7 Ground Slot Allocation of Dili Port.....	17
Figure 1.2-8 Candidate Land of Dry Port (Off-dock Yard) at Tasitolu	17
Figure 1.2-9 Dry Port under construction at Tasitolu (as of November 2013).....	18
Figure 1.2-10 Storage Facility Arrangement in Dili Port.....	19
Figure 1.2-11 Major Road Network Connecting to Dili Port.....	20
Figure 1.2-12 Major Port Side Road Surround the Dili Port.....	20
Figure 1.2-13 Layout of Passenger Facilities.....	21
Figure 1.2-14 Layout of Port Administration Facilities	22
Figure 1.2-15 Navigation Aids and Navigation Rout to Dili Port.....	22
Figure 1.2-16 Anchorage Arrangement Outer Dili Port	23
Figure 1.3-1 Outline of the Ferry “NAKROMA”	27
Figure 1.5-1 Organization of APORTIL (as of November 2013).....	31
Figure 1.5-2 Provisional Organization of Harbor Master (as of November 2013).....	31
Figure 1.5-3 Results of Inspection Performed in 2013.....	33
Figure 1.5-4 Garbage Collection Place	33
Figure 1.5-5 Oil Leak and Contamination in Workshop	34
Figure 1.6-1 East Gate.....	35
Figure 1.6-2 Main Gate	35
Figure 1.6-3 Interior Gate of Main Gate	35

Figure 1.6-4 West Gate 1	35
Figure 1.6-5 West Gate 2	36
Figure 1.6-6 Pedestrian for Ferry Passengers	36
Figure 1.6-7 East Fence	36
Figure 1.6-8 East Fence Seaside Edge	36
Figure 1.6-9 Main Fence	37
Figure 1.6-10 West Fence	37
Figure 1.6-11 West Fence (Eroded Area)	37
Figure 1.6-12 West Fence Seaside Edge	37
Figure 1.6-13 Layout of Yard Light	37
Figure 1.6-14 X-ray Scanner & Customs	38
Figure 1.6-15 Fence of Lighthouse	38
Figure 1.6-16 Staff of Gardamo Security Service	39
Figure 1.6-17 Civil Security & Maritime Security	39
Figure 1.6-18 ID Card for APORTIL Staff	39
Figure 1.6-19 ID Card for Port Workers	39
Figure 1.6-20 Visitor Pass	40
Figure 1.6-21 Vehicle Pass	40
Figure 1.8-1 Transaction Execution Timetable	45
Figure 1.8-2 Tibar Bay	46
Figure 1.8-3 Proposed Configuration of Tibar Port Development	46
Figure 1.8-4 Current Situation of the Candidate Site	46
Figure 2.1-1 Monthly Berthing Time at Dili Port (2012)	48
Figure 3.1-1 Container Cargo Estimate (Case-1)	52
Figure 3.1-2 Container Cargo Estimate (Case-2)	52
Figure 3.1-3 General Cargo Trend	53
Figure 3.2-1 Ferry Passenger Estimate	54
Figure 4.1-1 Evaluation Flow of the Infrastructure Fund Project	57
Figure 4.1-2 Evaluation Flow of the Line Ministries Project	58
Figure 4.1-3 Brief Outline of Port-related Procedures (Import)	60
Figure 4.1-4 Organization of DNTM (in the future)	61
Figure 4.2-1 Inspection Flow of Maintenance	64
Figure 4.2-2 Location of Improvement Facility	66
Figure 5.1-1 Facilities Requiring Repair	67
Figure 5.2-1 Inspection of Deterioration on BL5 and BL6	68
Figure 5.3-1 Relocation Site for New Ferry Facility (Assuming)	69
Figure 5.3-2 Plan of New Ferry Facility	70
Figure 6.1-1 Quay-side Handling of Bag Cargo (rice)	73
Figure 6.1-2 Quay-side Handling of Bag Cargo (cement)	73
Figure 6.1-3 Unutilized Equipment	74

Figure 6.1-4 Underutilized Warehouse.....	74
Figure 6.1-5 Night Time Handling (Hakata Port, Japan)	77
Figure 6.1-6 Cargo Handling Using Pallets (Tokyo Port, Japan)	77
Figure 6.1-7 Dry Port(Cikarang Dryport, Indonesia).....	77
Figure 6.2-1 Problems on Passenger Handling and Relocation of the Ferry to West Side.....	78
Figure 6.2-2 Current Situation of West Side of Dili Port	79
Figure 7.2-1 Restricted Area until Tibar Port opens.....	82
Figure 7.2-2 Restricted Area after Tibar Port opens (assumed)	82
Figure 8.2-1 Seaside Park to the West of the Port	83
Figure 8.2-2 Cruise vessel calling at Dili Port (MS Caledonian Sky).....	83
Figure 8.2-3 Cruise Route Map (MS Caledonian Sky)	84
Figure 8.2-4 Badly Damaged Passenger Terminal Building (under repair)	84
Figure 8.2-5 Cruise Ships which can be Accommodated in Dili Port.....	84

List of Tables

Table 1.1-1 Changes in Trade Value of Timor-Leste (unit: 1,000USD).....	5
Table 1.1-2 Major Items of Import (year of 2011) (unit: 1,000USD)	5
Table 1.1-3 Percent Changes of Inflation (average consumer prices).....	6
Table 1.1-4 Outline of SDP	6
Table 1.1-5 The Direction of Port Development in SDP.....	7
Table 1.1-6 Matrix of Five-year Strategic Plan of APORTIL (Port Development).....	10
Table 1.1-7 Official Development Assistance to the Transport & Storage Sector of Timor-Leste.11	
Table 1.2-1 Wharves of Dili Port.....	13
Table 1.2-2 Yard Usage of Dili Port	15
Table 1.2-3 Ground Slot Numbers of Container Yard	16
Table 1.2-4 Storage Facilities of Dili Port.....	18
Table 1.2-5 Major Cargo Handling Equipment	24
Table 1.3-1 List of Shipping Agency.....	25
Table 1.3-2 Trial Estimation of Port Fees for General Cargo Vessel.....	26
Table 1.3-3 Trial Estimation of Port Fees for Container Cargo Vessel.....	26
Table 1.3-4 Schedule of Ferry Services.....	27
Table 1.3-5 Price List of Ferry Services	28
Table 1.4-1 Cargo Throughput	29
Table 1.4-2 Throughput of Ferry Services.....	29
Table 1.7-1 Outline of SOP	41
Table 2.1-1 Average Waiting Time before Berthing at Dili Port (2012).....	47
Table 2.1-2 Average Berthing Time at Dili Port (2012)	47
Table 2.1-3 Berth Occupancy Ratio at Dili Port (2012).....	48
Table 2.1-4 Gross Cargo Handling Productivity at Dili Port (2012).....	49
Table 2.2-1 Rough Estimate of the Yard Capacity of Dili Port	50
Table 3.1-1 Estimate of Container Cargo Traffic in Dili/Tibar Port.....	52
Table 3.1-2 Estimate of General Cargo Traffic in Dili/Tibar Port.....	53
Table 3.2-1 Estimate of Ferry Passenger Traffic in Dili Port	54
Table 4.1-1 Annual Time Budgetary (APORTIL, MTC).....	55
Table 4.1-2 Budget Approval Competences (APORTIL, MTC).....	55
Table 4.1-3 Projects Category of ADN (2013 & 2014) (excerpted version)	56
Table 4.1-4 Budget Use Roles of the Pertinent Agencies concerning Port Development	58
Table 4.1-5 Procedures of Budget Uses in APORTIL	59
Table 4.1-6 Changes in operating expenses of APORTIL.....	60
Table 4.2-1 Standard of Deterioration Judgment.....	63
Table 4.2-2 Maintenance Budget of Dili Port on 2013.....	65
Table 4.2-3 Income and Expense of APORTIL on 2013	66
Table 5.3-1 Preliminary Rough Estimation	71

Table 5.3-2 Tentative Schedule of Project.....	71
Table 5.4-1 On Going Projects and New Project Proposed by the Study Team.....	72
Table 6.1-1 Improvement of General Cargo Operation (proposed by the Study Team).....	75
Table 6.1-2 Improvement of Container Cargo Operation (proposed by the Study Team).....	76
Table 7.2-1 Facility and Equipment needed for Port Security.....	80

ABSTRACT

0. Outline of the Study

0.1. Background of the Study

Port of Dili, located in the capital, is the only international port in the Democratic Republic of Timor-Leste (hereinafter referred to as “Timor-Leste”). Although the port has been improved by Japanese grant aid, the capacity of the port is nearly saturated and port safety is not satisfactory. Lack of maintenance is among the matters of concern which must be addressed for the port to support economic activities. The government of Timor-Leste has been formulating a development plan of a new port at Tibar, but this new port development will take 4-7 years before completion.

Planning and implementation of measures to effectively use the present Dili Port are therefore imperative.

0.2. Objectives of the Study

- 1) To gather and analyze basic information and data on the management of Dili Port, estimate rough demand (2018, 2023) and identify problem areas, countermeasures and their priorities etc.
- 2) To analyze the applicability of Japanese ODA taking account of other donors

0.3. Target Area

Dili Port is the target area of this study. The Study Team also took notice of local ports such as Suai New Port in terms of the future plans, road development plans and regional development plans.

1. Basic Data

1.1. Socioeconomic Conditions

1.1.1. Socioeconomic Conditions of Timor-Leste

Timor-Leste which became the first independent nation of the 21st century has an area of 15 thousand km² and a population of 1.2 million (2012) and new nation building has developed such as the establishment of administrative organizations and infrastructural recovery.

GDP per capita (Non-Oil GDP) remains at US\$ 886 in 2011, although growth rate (Non-Oil GDP) in 2011 indicated 9.5%

1.1.2. Government Policy on Port Development

The Strategic Development Plan (SDP) which was released in July 2011 presents a basic national building concept seeking to transform Timor-Leste from a low income country to a medium-high income country by 2030 through eradicating extreme poverty and establishment of a sustainable and diversified non-oil economy. As to sea port development, operation of Suai New Port operation and construction of Tibar New Port are included in the short-term (-2015) and operation of Tibar New Port

operation and upgrading facilities at local ports such as Kairabela are scheduled in the medium-term (2016 to 2020).

The program of the fifth constitutional government 2012-2017 which includes governmental growth strategies for the next 5 years was formulated on 26th August 2012. Activities related to the port sector include “Construction of a new port in Tibar”, “Establishment of a logistics base for the petroleum sector in Suai”, “Embarking on a regional port construction program in Laga, Lautem, Atauro, Kairabela etc.” and so on.

Creation of a new port at Suai is a part of the large-scale development plan envisaged on the south coast. The development plan consists of a variety of project components such as a port which will act as a supply base, refinery, petrochemical industry, LNG plant, and airport.

Kairabera Port is currently out of use due to the severe deterioration of the ramp and unloading equipment, and Com Port is located near the east end of Timor Island and acting as a fishery port providing fishery boats with water supply. APORTIL/ADN is going to undertake studies for the port development of Kairabera, Com and Atauro including natural conditions survey, designing, and traffic forecast.

Generally, population is sparse and major industries are yet to be developed behind local ports. Provision of accessibility to every village scattered in local areas is urgently needed. It is therefore advisable for the government of Timor-Leste to weigh the urgency of local ports development except island ports against that of local roads development.

1.1.3 Donors’ Support for the Port Sector

Japan, Germany, and Norway (until 2009) are major donor countries to the transport sector of Timor-Leste in recent years. Among multinational aid agencies, Asian Development Bank (ADB) and International Development Association (IDA), a member of the World Bank group, stand out as major players in this field. The activities of ADB and IDA are also focused on the road subsector.

In 2007, Germany donated the ferry NAKROMA currently sailing between Dili and Oecusse as well as Dili and Atauro. Germany has been planning to donate another ferry through KFW. Since this boat is designed to be berthed at a fixed berthing facility with a deep draft (around 4.5 m), a new deep-draft wharf needs to be created. The Government of Timor-Leste is responsible for its development. GIZ assisted the implementation of PFSA and PFSP in 2013 through consulting services of STET Maritime. GIZ’s assistance includes administrative reforms of APORTIL (separation of regulatory functions), capacity building of government officials, and preparation for the ratification of maritime conventions.

The US government continues to be interested in accelerating the implementation of the ISPS code in Timor-Leste and USCG plans to visit the country again in December 2013 to carry out an audit.

1.2. Present Conditions and Records of Upgrades of Facilities in the Port of Dili

1.2.1. Wharves, Aprons, Yard Area, and Storage Facilities

Berth Block Number	Length (m)	Width (m)	Depth (m)	Location	Description
Berth 289.2m	1	45.0	20.1	In front of passenger terminal	Construction in 1993, by Indonesia. Rehabilitation in 2009, by Japan
	2	45.0	20.1		ditto
	3	45.0	12.0		ditto
	4	45.0	12.0		ditto
	5	60.2	12.1	Westem part of pier	Construction in 1997, by Indonesia
	6	49.0	12.1		End of westem part of pier	Construction in 1997, by Indonesia Improvement in 2002, by ADB
Ferry landing place				East container yard	A slipway has been installed.

Source: APOL TIL

An apron and adjacent back yard are used for cargo handling in Dili Port. Loading and unloading of cargo including container is mainly carried out by ship's crane, and cargo handling operation is carried out by private stevedoring company. The container yard with a total area of 14,190m² is divided into east and west area; east container yard is used for stacking of 20ft container and west is for 40ft. There are 380 ground slots for laden container and 83 for empty for a total of 463 slots in the container yard. The storage facilities consist of three warehouses and one transshipment shed.

To make up for lack of port yard, APORTIL has launched leveling of land for dry port at Tasitolu about 9km west from Dili which is expected to start operations in January 2014.

1.2.2. Port Roads and Passenger Terminal

The major road to Dili Port is Portugal Avenue that parallels the seacoast and passes in front of the gate to the port, and which vehicles use to enter and leave the port. Another is Presidente Nicolau Lobato Street, which comes from the west side of the port to converge with Portugal Avenue where it passes the East Gate, and also carries heavy traffic. These two roads are used mainly by trucks entering and leaving Dili Port.

Passenger facilities include a ticket sales office, passenger terminal, and ferry landing, but the passenger terminal is not used at this time. Ferry passengers enter and leave through the passenger use gate (East Gate), go directly to the ferry landing, and board the ferry by crossing an inclined ramp.

1.2.3. Port Administration Facilities

The major port management functions are in the administration office, with the former passenger terminal and part of the site of the No. 2 warehouse used as offices to manage the site.

1.2.4. Channels, Basins, and Navigational Aids

The entrance to the channel into the Port of Dili is clearly indicated by navigation buoys, and ships pass between the buoys to enter the port. But because there are parts of the channel into the port where the water is shallow—between 6 or 7m—ships enter the port avoiding these locations. Pilot services are not provided in this port, so all ships are guided close to their berth by radio. Anchorages are distributed at 14 locations from D1 to D14 in areas on the ocean side of the channel entrance where the water is deeper than 34m, and ships drop anchor at locations indicated in instructions by the port master

1.2.5. Cargo Handling Equipment

Cargo handling in Dili Port is entirely performed by private stevedoring companies: APORTIL performs none of this work. Major cargo handling machinery used in the port is Reach Stacker (one), Fork Lift (three) and Rafter Crane (one).

1.3. Operation of the Port of Dili

Dili port is basically operational 24 hours a day, but entry into port is limited to daytime (7:30 a.m. to 5:00 p.m.). Wharves and gates are operational 24 hours a day, 363 days a year. Full containers are available only from 8:30 a.m. to 5:00 p.m., while empty containers are available all day.

1.4. Port Performance

1.4.1. Cargo Traffic

Containerized Cargo volume is basically on a rising trend and reached 45,608 TEU in 2012 , double the volume of 2007.

General cargo, a large portion of which is cement and rice, has also increased steadily in these years. It increased by around 50% from 2007 to be 183 thousand t in 2012.

1.4.2. Passenger Traffic

The number of passengers has increased slightly in the six years since 2006 when civil unrest occurred, reached a total of 56,160 (33,834: between Dili and Oecusse, 22,326: between Dili and Atauro) in 2012. The performance in 2009 was quite low because of long-term docking.

1.5. Port Management

1.5.1. Institutional Arrangement

As of December 2013, APORTIL is now under reformation with the assistance provided by GIZ, which includes maritime department's separation from APORTIL and reorganization under the Harbor Master.

1.5.2. Stevedoring

Four private companies conduct stevedoring at Dili port using their own cargo handling machinery and staffs. Private companies operate three tugboats in Dili port.

1.5.3. Maintenance of Equipment and Infrastructure

Private stevedoring companies carry out cargo handling in the port, providing and maintaining all required cargo handling machinery. Therefore, APORTIL doesn't manage and maintain the cargo handling machinery.

Regarding maintenance and management of the port facilities, registers of major facilities which are the foundation for maintenance and management are not provided, there are no maintenance and management manuals, and periodical inspection work is not done. But preparations are being made to hold a seminar on maintenance and management and work is underway to provide preliminary manuals or prepare inspection lists etc.

1.5.4. Environmental Considerations

APORTIL should treat waste matter produced by port work and ferry use by appointing the responsible department and enacting procedure and rules. For preventing ground contamination by oil, fuel and lubricant in the work shop area, APORTIL must supervise the cargo handling companies.

1.6. Port Security

1.6.1. Facilities and Equipment

There are 4 gates in the port. Access control is mainly conducted at 3 of the gates. The physical condition of the gates is fairly good. However, Access control work assignments are difficult to understand and ID check is not conducted properly.

East Fence and Main Fence are observed to be fulfilling their security functions. West Fence has some problems. There are many parts corroded in the steel structure. Urgent countermeasures are required. Furthermore, there are no security measures to prevent an intrusion from outside at the seaside edge.

The lighting range and intensity shall be examined from the viewpoint of port security. Furthermore, it is recommended that one additional security light be installed on the west edge of the port premises to improve security.

The scanner which was obtained through Japanese grant aid is in need of repair. However, two movable scanners newly obtained through a grant from China are in working order.

The port is equipped with a fire hydrant and fire extinguishers. However, their functions should be examined. Fire engine is not deployed.

1.6.2. Institutional Arrangements

Timor-Leste has not yet ratified the IMO SOLAS Convention (although a legislative bill has been tabled in the Diet in order to ratify the Convention). The port security framework based on the ISPS Code has not been established in the port at this time. Port Facility Security Assessment (PFSA) has already been done and Port Facility Security Plan (PFSP) based on the PFSA has also been developed accordingly in November 2013 with assistance provided by GIZ.

1.7. Port Safety

1.7.1. Accident Records

APORTIL has no records of cases of accidents or incidents which have occurred. In order to eventually create a safe port environment based on analysis of accidents, records of dangerous situations including near-misses must be prepared.

1.7.2. Safety Measures

Dili Port has prepared SOP (Standard Operation Procedures) for control of traffic passing through its gates, but the SOP is not fully applied.

1.8. Tibar New Port Project

1.8.1. Outline of the Development Concept

The Government of Timor-Leste is planning to create a new port at Tibar, 10 km to the west of Dili replacing the narrow and congested Dili Port.

1.8.2. Progress of the Project

The council of ministers approved the project on August 2, 2013. The Government of Timor-Leste and IFC, the advisor for this project, proceeded to the invitation of non-binding expressions of interest (EOI) from interested parties in August. Forty-seven companies including operators and contractors from across the world submitted EOI before the deadline of September 5. Around ten renowned port operators are included among them. RFP will be announced in November and the winning bidder will be decided around February 2014. IFC expects port operation to commence in 2016-2017 at the earliest.

IFC proposes a concession scheme (DBOT) for PPP in the Tibar New Port development after comparing government procurement, management contract, and concession.

2. Existing Capacity of Dili Port

2.1. Quay-side Capacity

Container vessels and cargo vessels on average wait at the anchorage area for berthing for two days and two weeks, respectively. The ship congestion is caused by the long berthing time of general cargo vessels. According to the ship arrival data of Dili Port, container vessels and cargo vessels on average stay at the berth for one day and five days plus, respectively.

Since conventional vessels occupy the quay much longer than container vessels, countermeasures need to be focused on the improvement in handling efficiency of conventional vessels.

Judging from the gross cargo handling productivity, the performance of container handling by ship gears (8 box/hr on average) does not have much room for improvement. On the other hand, general cargo handling could be done more efficiently.

2.2. Yard Capacity

In Dili Port, the current yard is capacity-wise roughly balanced between import and export and can handle up to 120,000 TEU/year theoretically. Having said that, it should be noted that the container yard of Dili Port cannot function as efficiently as average container ports due to several reasons. These problems should be addressed to make the container yard capacity fully functional.

3. Traffic Projection

3.1. Cargo Traffic

3.1.1. Containers

The Study Team estimated the future cargo traffic applying four methods. In order to reflect the size of real economic activities, the Study Team used non-oil GDP as a basis of the analysis. Since rice importers have been trying to containerize rice imports currently carried by conventional vessels in bags, the Study Team factored in a gradual shift of rice imports to container vessels. Development of a competing container port in the south coast is not expected to have great impacts on Dili/Tibar during this study's planning horizon and thus not taken into account. The Study Team would rather discard analogical analysis because the Timor-Leste's GDP per capita is much smaller than that of compared nations.

Table Estimate of Container Cargo Traffic in Dili/Tibar Port (TEU)

Case	Methods	Record (2012)	Estimate	
			2018	2023
<u>Case-1</u>	Time-series analysis based on the container throughput of the last five years	45,608	<u>85,420</u>	<u>120,589</u>
<u>Case-2</u>	Correlation between GDP and container throughput		<u>92,167</u>	<u>136,353</u>
Case-3	Analogical analysis based on the correlation between GDP per capita and TEU per capita in ASEAN region		62,134	99,017
Case-4	Analogical analysis based on the correlation between GDP per capita and TEU per capita in island nations		89,488	133,498

3.1.2. General Cargo

The Study Team estimated the future cargo traffic applying the time-series analysis based on the general cargo throughput of the last ten years. The Study Team then factored in a gradual shift of rice imports to container vessels as described in the prior section.

Table Estimate of General Cargo Traffic in Dili/Tibar Port (t)

Record (2012)	Estimate	
	2018	2023
183,457	258,782	282,816

3.2. Ferry Passengers

The Study Team estimated the future passenger traffic applying the following methods.

Table Estimate of Ferry Passenger Traffic in Dili Port

Case	Methods	Record (2012)	Estimate	
			2018	2023
Case-1	Time-series analysis based on the traffic data of the last five years (excluding the data of 2009)	56,160	76,027	90,292
Case-2	Correlation between population and passenger traffic		78,069	97,340
Case-3	Correlation between GDP per capita and passenger traffic		80,690	101,738

4. Institutional Issues to be Addressed

4.1. Port Management

With the growing number of cargoes and passengers at Dili port, it can be said that the structure of APORTIL is not sufficient in terms of both quality and quantity. The most experienced staff only has around 10 years of work experience and there are not enough human resources with expert knowledge and practical experience in port related fields, therefore, capacity building is necessary for efficient cargo handling.

Private companies including the Chamber of Commerce and Industry of Timor-Leste have requested Customs, which is under the jurisdiction of Ministry of Finance and carries out inspections on the east and west side of Dili port, to speed up procedures.

4.2. Maintenance

4.2.1. Personnel assignment of organization

Port facility maintenance is under the jurisdiction of the Technical Section. TS is staffed by three people. Under this system, there are not enough staff to maintain all the port facilities and there is an urgent need to hire more personnel.

4.2.2. Maintenance work

Although there is a department that performs maintenance in Dili Port, it actually does not perform sufficient maintenance because of its small staff and limited budget.

Deterioration of port facilities begins immediately after they are completed, and as it advances their functions decline. It is important to do periodical inspections to clarify the state of deterioration progress and repair facilities before their functions fail.

The maintenance budget is allotted from the government budget, and this fiscal year, a total of US \$4,175,000 was budgeted for maintenance of the facilities of Dili Port.

4.3. Partnership between APORTIL and Pertinent Organizations at ASEAN

APORTIL is expected to be proactive in developing its own capacity of port administration and management through relationship-building and partnerships with pertinent organizations of ASEAN or its member nations. Japan should encourage ASEAN member nations to accept persons in charge of port security in Timor-Leste at these ASEAN meetings.

5. Identification of Facilities in Need of Urgent Upgrades

5.1. Identification of Deteriorated Facilities

The facilities of Dili Port are scheduled to be repaired during 2013. In addition to these facilities, berths BL5 and BL6 and a punctured drainage pipe in the base of the Eastern container yard are in need of urgent repairs. The ferry facility is important to move from the East Terminal to the west side

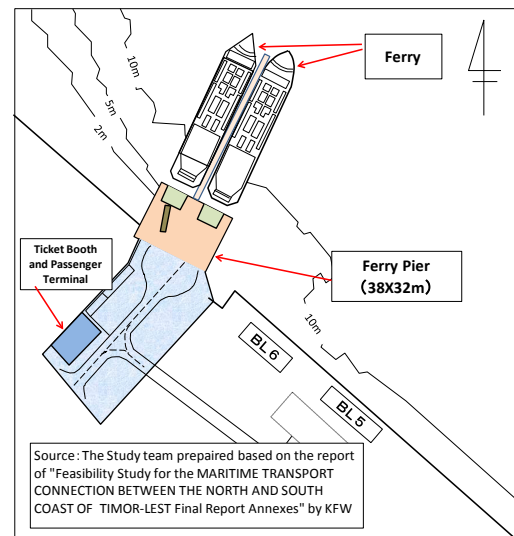
of the port.

5.2. Prioritization of Facilities to be Upgraded

It is important that rehabilitation should be developed according to priority among the urgent projects. In order of priority, rehabilitation of the East terminal, the deck surface of slabs at berth BL5 and BL6 and survey for deck structure soundness, and new ferry facility construction are planned to be rehabilitated. In case of rehabilitation at berth of BL5 and BL6, it is sufficient to perform the minimum necessary level of repair work because all cargo handling in Dili Port will be transferred to Tibar Port after it starts operating.

5.3. Alternative Countermeasures

The study team proposes that the ferry facilities to be moved from the present landing area in the East Terminal to the west side of the port. The construction cost of the new facility is estimated at approximately US\$ 8.5 million and the total construction period is estimated as 39 months.



6. Improvement of the Port Operation

6.1. Cargo Traffic

6.1.1. Quay-side

The analysis of the quay-side capacity and yard capacity (see Chapter 2) indicates that the main cause of the port congestion lies in quay-side rather than yard-side operations. In order to ease the quay-side congestion, reduction of the per-vessel berthing time is imperative. Since general cargo vessels stay at the quay much longer than container vessels, appropriate measures need to be taken for general cargo vessels.

6.1.2. Yard-side

The container yard of Dili Port is not efficient due to the limited space, inconvenient alignment, and a lack of coordinated operation. In order to increase the yard space, expansion of the yard or decrease of the dwelling time is needed. The Study Team identified alternative countermeasures including software approaches and hardware approaches to achieve these goals. Bearing in mind that Tibar Port will become operational before 2020, less costly approaches are recommendable.

6.1.3. Recommendations of the Chamber of Commerce and Industry of Timor-Leste

In July 2013, the Chamber of Commerce and Industry of Timor-Leste (CCITL) presented several recommendations to APORTIL and Customs in order to improve the port operation and port-related procedures. Recommendations for APORTIL include 24-hour port operation and cargo handling, installment of cranes, use of vessels equipped with cranes, quick deberthing of vessels after cargo handling, and improvement of port security.

6.1.4. Implementation of Countermeasures

Engaging stakeholders (Customs, stevedoring companies, shipping agent, and consignees) and building consensus among them is essential in improving the port operation. APORTIL can act as the focal point of this convening a port users' meeting, showing improvement directions and asking for cooperation from stakeholders.

(1) General Cargo

To increase the efficiency of general cargo handling, nighttime cargo handling supported by lighting poles, employment of large trucks and pallets, use of vessels with ship gears, containerization of rice transport, smooth evacuation of import cargo and customs clearance at dry portbonded warehouses, timely arrangement of trucks corresponding to the ship arrival schedule should be carried out.

(2) Containers

To increase the efficiency of container cargo handling, extension of gate operation hours, prohibition of un-stuffing by consignees inside the yard, removal of the unutilized handling equipment from the yard, unified yard operation by a single terminal operator or coordinated yard planning by APORTIL, demolition of underutilized warehouses, demolition of the passenger terminal building, expansion of the East Yard, creation of dry ports should be carried out.

6.2. Passenger Traffic

In order to resolve existing problems, functions of passengers and cargoes must be separated from each other, therefore the rather drastic measure of moving ferry functions to the west side of the port corresponding to the new ferry boat donation by KFW seems to be necessary.

7. Port Security Measures

7.1. Institutional Arrangements

IMO SOLAS Convention shall be ratified promptly. And according to the constitution of national port security law, the port security scheme shall be built up in Dili port. To realize this scheme, one administration headed by a PFSO shall be established by APORTIL.

7.2. Facility and Equipment Requirement

From the result of the site survey and discussions with persons concerned, the facilities and equipment needed for port security of Dili Port are listed as follows.

(1) Facility Refurbishment

- Fence: Intrusion Protection of East Fence Seaside Edge, Partial Repair of Main Fence, Re-construction of West Fence, Intrusion Protection of West Fence Seaside Edge, Cutting of Trees over Fence and Cleaning, Re-construction of Lighthouse Fence
- Gate: Height Reinforcement of West Gate 2

(2) New Facility & Equipment

CCTV Camera System, Monitor Room, Security Light, Clocking System, Sign Board, Scanner for Passenger Luggage, Scanner for Passenger

8. Future Plan of Dili Port

8.1. Impacts of the Tibar New Port Project

The operation of Tibar Port is expected to start before 2020. Tibar Port will be developed by a concession scheme which assumes complete relocation of international cargo handling activities from Dili Port. If that is the case, large infrastructure investment in Dili Port should be limited to the improvement of the ferry terminal which will remain in Dili. Block 5 and 6 are deteriorated and will need some rehabilitation works to ensure cargo handling functions until Tibar Port starts operation. Since Timor-Leste will soon ratify the SOLAS convention, security/safety measures required to meet the ISPS code should be taken in Dili Port until the relocation of international trade activities.

8.2. Dili Port after the Port Functions Relocation

All cargo handling activities except ferries will move away from Dili, once Tibar Port starts operation. After this, the current Dili Port area will have great potential to attract tourists, visitors, and shoppers taking advantage of its seaside location. The area behind the new ferry wharf can be used for parking lots and a ferry passenger building. The eastern part of the wharf is still structurally intact and can accommodate cruise vessels.

The land use plan after cargoes are shifted to the Tibar New Port should be reviewed from urban planning perspective rather than port planning. Therefore, it needs to be carefully considered in the context of the urban development master plan for Dili which is being developed with the support of JICA and with facilitating consensus-building among pertinent agencies in Timor-Leste.



0. Outline of the Study

0.1. Background of the Study

Democratic Republic of Timor-Leste (hereinafter referred to as “Timor-Leste”) has just started a period of economic development after undergoing restoration from the conflict in 1999 and achieving independence in 2002.

Port of Dili, located in the capital, is the only international port in Timor-Leste. It also serves as a ferry terminal for Oecusse and has been improved by Japanese grant aid. However, the capacity of Port of Dili is nearly saturated and the port safety is not satisfactory. Security measures to meet the requirements of the SOLAS convention are not yet fully enforced and traffic lines of ferry passengers and container cargo are not separated. Lack of infrastructure maintenance and insufficient channel depth are some of the matters of concern of the port in supporting economic activities.

International Finance Corporation (IFC) assisted the government of Timor-Leste in formulating a development plan of a new port at Tibar to the west of Dili. This new port development will take 4-7 years before completion, although it is included in the national development plan. Planning and implementation of measures to effectively use the present Dili Port are therefore imperative.

0.2. Objectives of the Study

- 1) To gather and analyze basic information and data on the management of Dili Port and identify problem areas and countermeasures taking account of the following:
 - Rough demand estimate (2018, 2023) and goals of infrastructure upgrade
 - Progress of the Tibar New Port project
- 2) To analyze the applicability of Japanese ODA taking account of other donors

0.3. Target Area

Dili Port is the target area of this study. In formulating a future plan of the port, however, the situation of local ports (Suai New Port etc.) will be taken into consideration as well as the Tibar New Port. The Study Team also took notice of the future plans, road development plans and regional development plans concerning these ports.

1. Basic Data

1.1. Socioeconomic Conditions

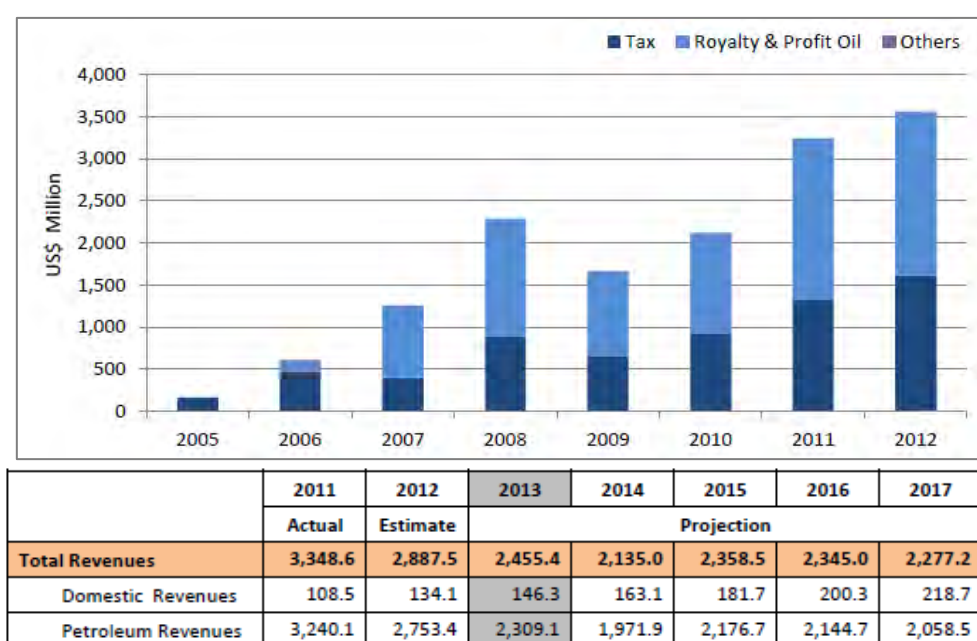
1.1.1. Socioeconomic Conditions of Timor-Leste

(1) Overview

Timor-Leste which became the first independent nation of the 21st century has an area of 15 thousands km² and a population of 1.2 million (2012).

Following a UN-supervised popular referendum in 1999 in which the majority voted for independence and a United Nations Transitional Administration in East Timor (UNTAET) period, Timor-Leste independence was formalized in May 2002 and new nation building was commenced under reconstruction assistance by international society. In 2006, a disturbance which originated with a demonstration by defecting soldiers exploded into armed conflict involving the national military and police. In response, the United Nations launched the United Nations Integrated Mission in Timor-Leste (UNMIT) to restore order. The first national election was held in 2007 followed by the establishment of administrative organizations and infrastructural recovery. UNMIT finished at the end of 2012.

In terms of economy, there are some petroleum and gas fields in the southern territorial sea from Timor Island. Revenue is controlled and managed under the Petroleum Fund established in 2005 and represents major income of the national budget. This is allocated to various fields of public investment; however the petroleum revenue is expected to decrease in the future.



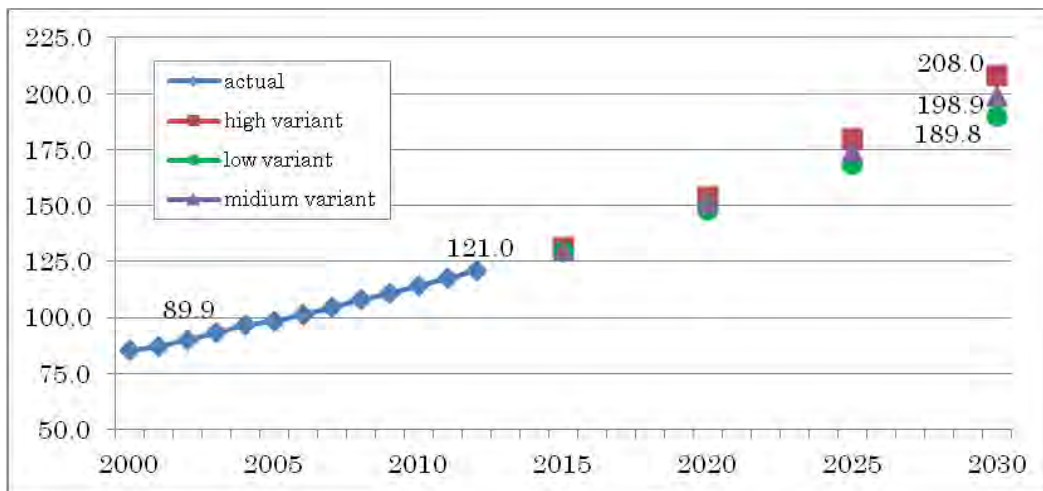
Source: Petroleum Fund Annual Report 2012, Ministry of Finance, Timor-Leste
State Budget Overview 2013, Ministry of Finance, Timor-Leste

Figure 1.1-1 Annual Petroleum Revenue (above) and Total Revenue of Government (below)

(2) Population

Population of Timor-Leste has continued to grow consistently from its independence in 2002; it has risen by 30% in the past 10 years, from 0.9 million in 2002 to 1.2 million in 2012.

The United Nations has forecast that population of Timor-Leste will continue to increase; in the high case, 2030 population is estimated to reach 2.080 million, 1.989 million in the medium case and 1.898 million in the low case, which represents a 60 to 70% increase from the present.



Source: (2000-2012) World Development Indicators, World Bank

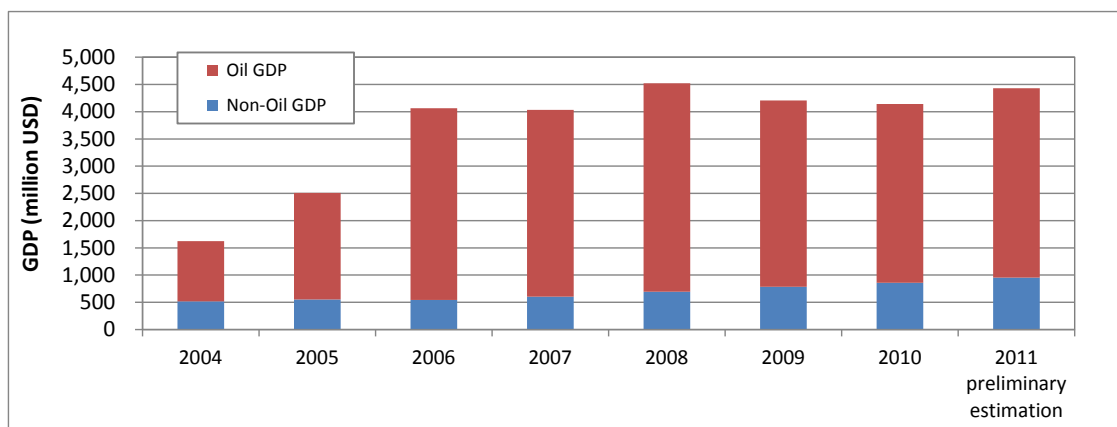
(2015, 2020, 2025, 2030) United Nations Population Division

Figure 1.1-2 Population of Timor-Leste and Estimation by United Nations

(3) GDP

In the statistics of Timor-Leste, Gross Domestic Product (GDP) which is valued at around USD 4.5billion has two series, one that includes oil and natural gas products, and another which excludes these products (Non-Oil GDP).

The largest contributor to Timor-Leste GDP is oil and gas production. Figure 1.1-3 shows changes in GDP by GDP concerning oil and gas production (Oil GDP) and Non-Oil GDP.

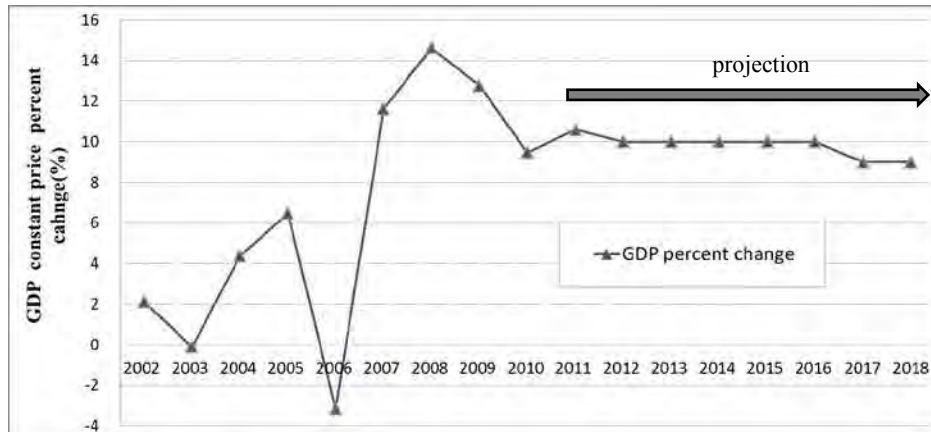


Source: Ministry of Finance, Timor-Leste

Figure 1.1-3 Changes in Oil GDP and Non-Oil GDP

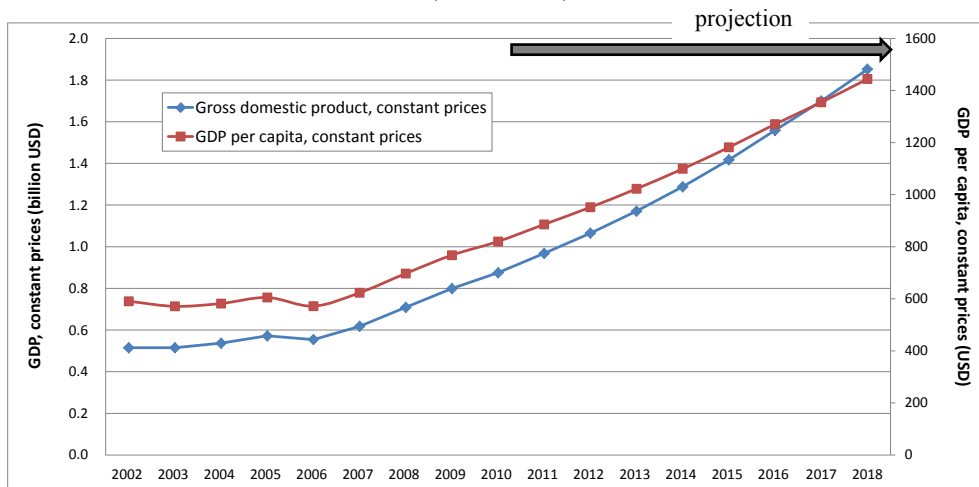
Economic growth rate of Timor-Leste (Non-Oil GDP: hereinafter to be defined in the same way) has risen at an average of 6.5% in the past 9 years from 2002 to 2010 while large swings were observed due to the domestic mess in 2006 when negative growth was recorded.

Since 2007, it has achieved double-digit growth every year due to the stabilized domestic political situation and order, which have been promoted by government expenditure, agriculture and private sectors such as construction and service industry.



Source: World Economic Outlook Database, April 2013, IMF

Figure 1.1-4 GDP percent change (constant price) of Timor-Leste and Estimation by IMF (2011-2018)



Source: World Economic Outlook Database, April 2013, IMF

Figure 1.1-5 GDP (constant price), GDP per capita of Timor-Leste and Estimation by IMF (2011-2018)

(4) External Trade

Table 1.1-1 shows the historical trend of trade value of Timor-Leste. Both exports and imports show an increasing trend, with imports substantially exceeding exports.

Import commodities were valued at around 319 million dollars in 2011 with electrical machinery and parts such as home electronics ranking first with a value of 99 million dollars followed by

petroleum products such as diesels and transport machinery such as vehicles and their parts.

Export commodities were valued at around 53 million dollars in 2011; 80% of it is re-export and almost all of the remaining is coffee which can be considered to be Timor-Leste's only industry at present.

Table 1.1-1 Changes in Trade Value of Timor-Leste (unit: USD 1,000)

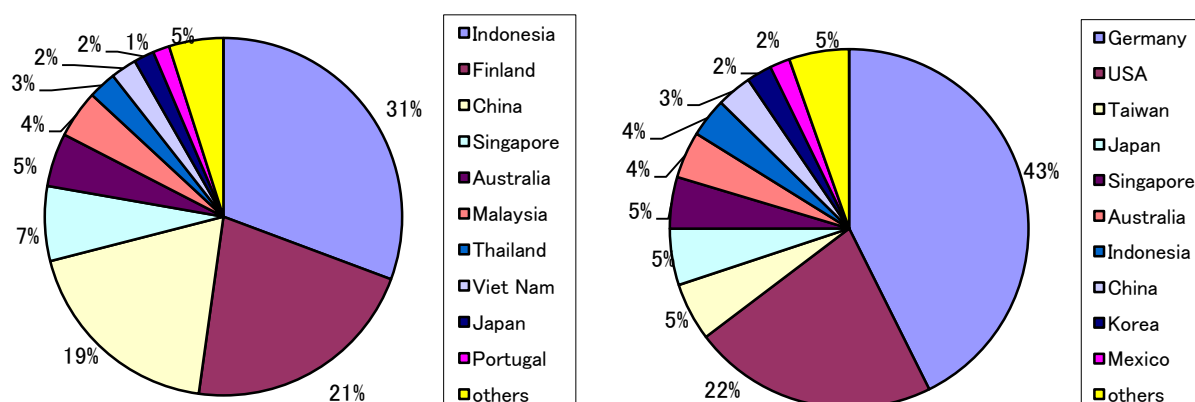
	2006	2007	2008	2009	2010	2011
IMPORT	100,802	206,133	268,584	295,096	298,091	339,630
merchandise	87,695	199,369	258,429	282,595	246,311	318,778
non-merchandise	13,107	6,764	10,154	12,501	51,780	20,852
EXPORT	60,685	19,179	49,207	34,512	41,660	53,253
export	8,455	7,734	12,899	8,491	16,395	13,303
coffee	7,999	n.a.	12,632	8,291	15,987	11,923
Re-export	52,231	11,445	36,307	36,021	25,265	40,051

Source : External Trade Statistics Annual Reports 2011, Ministry of Finance

Table 1.1-2 Major Items of Import (year of 2011) (unit: USD 1,000)

Items	Import value
Electrical machinery, equipment and parts	99,381
Oils and products of their distillation	47,654
Vehicles and their parts	33,711
Iron or steel articles	23,493
Machinery and mechanical appliances parts	20,714
Furniture and similar stuffed furnishing	12,828
Beverage, spirits and vinegar	9,275
Cereal	9,182

Source : External Trade Statistics Annual Reports 2011, Ministry of Finance



Source : External Trade Statistics Annual Reports 2011, Ministry of Finance

Figure 1.1-6 Major Trading Partners: Import (left) and Export (right)

(5) Inflation Rate

Table 1.1-3 shows inflationary changes in Timor-Leste. Figures have been high (around 10 %) in recent years while economic reconstruction progresses and population continues to grow. Improving transportation infrastructure is crucial to deliver goods and materials smoothly so that inflation can be held at a proper level.

Table 1.1-3 Percent Changes of Inflation (average consumer prices)

											Unit: %
2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
4.09	7.16	3.24	1.12	3.92	10.32	9.04	0.68	6.77	13.50	11.80	8.00*

*2013: estimated by IMF

Source: World Economic Outlook Database, April 2013, IMF


1.1.2. Government Policy on Port Development

(1) Strategic Development Plan (SDP)

The government of Timor-Leste conducted the Strategic Development Plan 2011-2030 (SDP) in July 2011 at the request of donors to compile a medium- and long-term national development plan.

The SDP whose motto is "Goodbye Conflict, Welcome Development" presents a basic national building concept seeking to transform Timor-Leste from a low income country to a medium-high income country by 2030 through eradicating extreme poverty and establishment of a sustainable and diversified non-oil economy. This plan includes programs to be performed in various kinds of sectors, among them agriculture, tourism and petroleum are identified as pillars to promote economic growth in the future. The service industry is also expected to grow.

Table 1.1-4 Outline of SDP

Formulated	July 2011		
Target period	from year of 2011 to year of 2030		
Vision of economic development	<ul style="list-style-type: none"> ■ to become a medium-high income country by 2030 ■ to eradicate extreme poverty and establish a sustainable and diversified non-oil economy 		
Economic growth target (non-oil GDP)	<ul style="list-style-type: none"> ■ Until 2020 : annual average 11.3% ■ From 2020 to 2030 : (moderate scenario)8.3% (high scenario)11.2% 		
Staging of SDP	Short Term('11~'15) <ul style="list-style-type: none"> • Human Resources Development • Strategic Industries • Infrastructure 	Medium Term('16~'20) <ul style="list-style-type: none"> • Infrastructure • Strengthening Human Resources • Market Formation 	Long Term('21~'30) <ul style="list-style-type: none"> • Eradication of Extreme Poverty • Strong Private Sector • Diversified Non-Oil Economy 

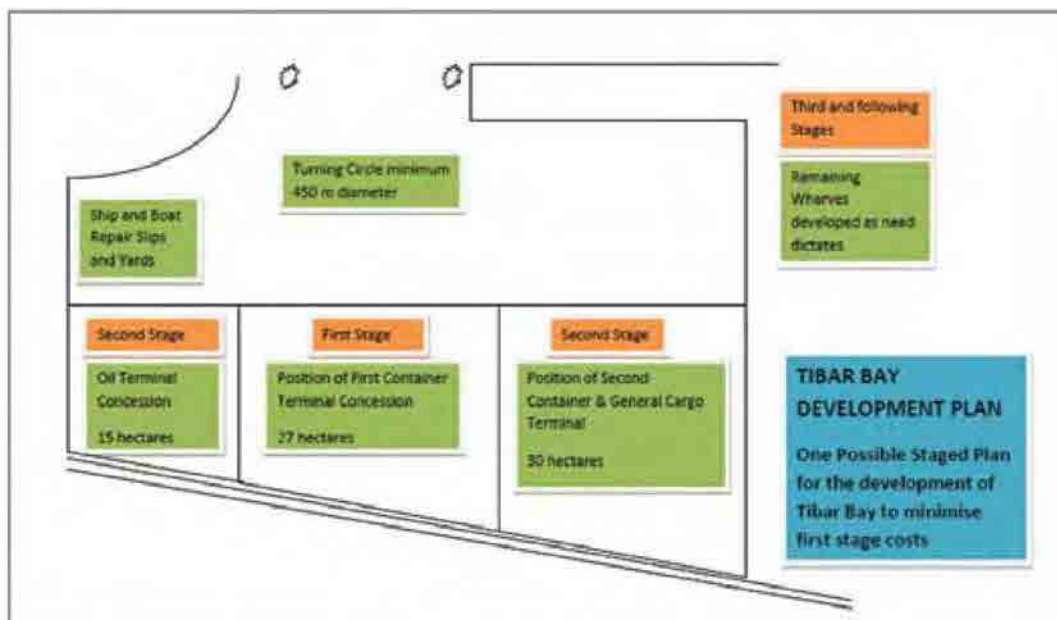
Source: Strategic Development Plan 2011-2030

As to sea port development, new ports are positioned as a national priority to support the growing economy and meet future industry and freight demands in Chapter 3 of SDP, “Infrastructure Development”, which states was described that construction of Tibar new port will commence by 2015 and operation will start by 2020 including development of Suai new port and facilities upgrading at local ports such as Atauro.

Table 1.1-5 The Direction of Port Development in SDP

Short term(~2015)	Medium term (2016-2020)
<ul style="list-style-type: none"> ● The new sea port at Suai will be operational ● Port facilities will have been upgraded at Com, Atauro, Vemasse, and Oecusse Ambeno ● Construction of the new port at Tibar will have commenced 	<ul style="list-style-type: none"> ● The Tibar Port will be operating efficiently as Timor-Leste’s main port ● Port facilities will have been developed at Kairabela and on the south coast near Beaçõ

Source: Strategic Development Plan 2011-2030



Source: Report for International Finance Corporation, Public Private Partnership, Approaches to Port Development In Timor-Leste, March 2011

Source: Strategic Development Plan 2011-2030

Figure 1.1-7 Tibar Port Development Plan in SDP

(2) Program of the fifth constitutional government 2012-2017

The program of the fifth constitutional government 2012-2017 which includes governmental growth strategies for the next 5 years was formulated to give shape and content to the programs established in the Strategic Development Plan 2011-2030 on 26th August 2012.

Approaches of port sector in this program are as below.

- Construction of a new multi-purpose national port in Tibar with a capacity of 1 million tons per year and the ability to cater for commercial cargo and passenger needs
- Establishment of a logistics base for the petroleum sector in Suai, where a new port will provide an entry point for the materials and equipment, and include shipbuilding and repair

facilities

- Embarking on a regional port construction program in order to build, repair and expand facilities in Laga, Lautem, Atauro, Kairabela, Oecusse and Manatuto
- A more detailed study to determine maritime facilities to be built for the port of Hera which is permanently threatened by sedimentation



Source: Prepared by the Study Team based on Section4, ANNEX of Decree-Law No3/2003

Figure 1.1-8 Major Ports in Timor-Leste

(3) Southern Coast Project

Creation of a new port at Suai is a part of the large-scale development plan (Tasi Mane Project) envisaged on the south coast. The development plan consists of a variety of project components such as a port which will act as a supply base, refinery, petrochemical industry, LNG plant, and airport (Figure 1.1-9).



Source: Website of Timor GAP

Figure 1.1-9 Map of Tasi Mane Project

Timor GAP, the state owned petroleum company, summarizes the objective of the development of Suai Supply Base in its website as follows. *“The government of Timor-Leste intends to build and operate a world class logistic Suai Marine Supply Base to support all offshore oil and gas activities in Timor-Leste Exclusive Area and Joint Petroleum Development Area. The supply base will provide a springboard for the growth of general industry around the Suai area that will form the future Small and Medium Enterprises (SMEs) of Timor-Leste. As part of Tasi Mane Project, this project objective will be considered as first initial implementation of Suai Supply Base infrastructure through a development of multi user integrate Marine Supply Base. Therefore, it can be seen in the following areas: Establishment of an oil and gas industry in Timor-Leste; Stimulate the use of Timor-Leste as a base for supporting other infrastructure projects (i.e. power, road, telecommunications, waste management, utilities, airport, medical services, pipelines operations, etc.); Creation of job and business opportunities; As a catalyst for the development of the Southern region”.*

As of September 2013, construction of a housing complex for resettlement is underway and development of the new port is yet to be started.

(4) Kairabera Port and Com Port

The Study Team visited two local ports located to the east of Dili, Kairabera Port and Com Port, in November 2013. Kairabera Port is currently out of use due to the severe deterioration of the ramp and unloading equipment (Figure 1.1-10). Kairabera was used by Indonesia for military purposes until the independence of Timor-Leste. Com Port is located near the east end of Timor Island and acting as a fishery port providing fishery boats with water supply (Figure 1.1-11). The National Port Authority of Ministry of Transport and Communications (Administração dos Portos de Timor-Leste (hereinafter referred to as “APORTIL”)) and the National Development Agency (hereinafter referred to as “ADN”) is going to undertake studies for the port development of Kairabera, Com and Atauro at a cost of US\$ 130 thousands for each study. The studies will include natural conditions survey, designing, and traffic forecast. The government of Timor-Leste is planning to have the new ferry boat call at these three ports.



Figure 1.1-10 Kairabera Port



Figure 1.1-11 Com Port

Generally, population is sparse and major industries are yet to be developed behind local ports. Provision of accessibility to every village scattered in local areas is urgently needed. It is therefore

advisable for the government of Timor-Leste to weigh the urgency of local ports development except island ports against that of local roads development.

(5) Five-year Strategic Plan of APORTIL

APOINTIL formulated the strategy targeting the next five years (2013-2017) in 2012 which is compiled in terms of (1) Development of infrastructure, (2) Development of legal frameworks and actions supporting the maritime transportation and port, and (3) Development of human resources specialized for maritime transportation and ports.

Among them, Development of infrastructure consists of regional ports and the main ports (Dili port and Tibar port) including respective goals, activities, target years and so on. Some of the activities are budgeted and have been already launched. In this plan, it is mentioned that Com port and Atauro port should be started prior to other regional ports and that rehabilitation works at Dili port should be carried out from 2013 to 2014 and dredging should be implemented every two years.

Table 1.1-6 Matrix of Five-year Strategic Plan of APORTIL (Port Development)
(Excerpted version)

Program	Goals	Activities	Expected results & Indicator	Target Year				
				13	14	15	16	17
Development of regional ports	1. Minimize dependence on import/export of Dili port	Hydrographic survey of Com Port	Complete the technical survey and ready to implement					
		Construction of Com Port	Operation of Port					
	2. Opening coastal sea routes	Hydrographic survey of Atauro Port	Complete the technical survey and ready to implement					
		Construction of Atauro Port	Operation of Port					
	3. Opening to external trade and develop regional economy	Hydrographic survey of Kairabela Port	Complete the technical survey and ready to implement					
		Construction of Kairabela Port	Operation of Port					
		Construction of Oecusse Port	Officially opened to external trade					
		Construction of basin at Tibar Bay	Partial completion					
Development of the main ports :Dili :Tibar (future)	1. Dili port : Provide port services and to ensure the import and export	Dredging of Dili Port	Efficiency of shipping traffic					
		Rehabilitation of pavement of Dili port	Partial completion					
		Rehabilitation of passenger terminal	Partial completion					
		Rehabilitation of yard of Dili port	Partial completion					
	2. Tibar Port ensure the import and export that are predicted to increase, dedicate to large vessels and solve the problems of congestion at Dili Port	Rehabilitation of fences to reach the IMO standard	Partial completion					
		Rehabilitation of existing warehouses	Partial completion					
		Technical survey for Tibar new port	Complete the technical survey and ready to implement					
		Construction of Tibar new port	Partial completion					

Source: MATRIX PLANO STRATEGICO 5 ANOS APORTIL ANO2013-2017, APORTIL

1.1.3. Donors' Support for the Port Sector

(1) Overview of ODA to the Transport Sector

Japan, Germany, and Norway are major donor countries to the transport sector of Timor-Leste in recent years (Table 1.1-7). Norwegian aid in this sector until 2008 was aimed at road rehabilitation and maintenance in rural areas. Among multinational aid agencies, Asian Development Bank (ADB) and International Development Association (IDA), a member of the World Bank group, stand out as major players in this field. The activities of ADB and IDA are also focused on the road subsector.

Table 1.1-7 Official Development Assistance to the Transport & Storage Sector of Timor-Leste
(Commitments, Current prices in million USD)

Year		2008	2009	2010	2011	
All Donors, Total		11.62	3.42	61.07	22.56	
All Donors, Total	DAC Countries, Total	11.62	3.42	15.07	2.56	
	DAC Countries, Total	Australia	0.10	..	0.03	0.03
		Germany	0.06	2.86	0.09	..
		Japan	9.09	0.56	14.94	2.54
		Norway	2.37	..	..	..
		Portugal	0.01	..	0.00	..
	Multilateral, Total	..	..	46.00	20.00	
	ADB Special Funds	..	..	46.00	..	
IDA	..	..	..	20.00		

Source: OECD

The World Bank is supporting a road improvement project between Dili and Ainaro (120 km in length) which is to be completed in six years. The World Bank changed this project from a grant to a loan scheme because Timor-Leste became eligible for loan assistance two years ago. The project funds are composed of the government fund (1/2), a grant from the World Bank (1/6), a loan from the World Bank (1/6). ADB has been supporting the 28-km road improvement between Dili and Liquica. ADB also approved the upgrading of two roads (170 km in the total length) crossing the Timor Island in September 2013.

(2) Germany

Germany is quite active in assisting Timor-Leste in the maritime sector. In 2007, it donated the ferry Berlin NAKROMA (hereinafter referred to as "NAKROMA") currently sailing between Dili and Oecusse as well as Dili and Atauro. Germany has been planning to donate another ferry through KFW

(Kreditanstalt für Wiederaufbau) so that APORTIL can have at least one ferry boat available during the docking. Since this boat is designed to be berthed at a fixed berthing facility with a deep draft, a new deep-draft wharf needs to be created. KFW has carried out conceptual designs of the ferry wharf but the Government of Timor-Leste is responsible for its development.

KFW and the Ministry of Finance signed a financing contract for this project in September 2013. Based on the contract, the Ministry of Transport and Communications (MTC) will put out the consulting works (detailed design, tender documents preparation, shipbuilding supervision) and shipbuilding to tender in the 2nd half of 2014. Shipbuilding will commence in 2015 and last for 12 months. Taking into account the time for commissioning, the ship delivery is expected in the end of 2016. It is possible for this project to take one more year.

APORTIL is requesting an emergency fund for the new ferry wharf (US\$ 3 million for the cheapest berth alignment alternative) from ADN but the prospects are unclear because its designs and cost estimates are not yet ready. Since KFW wishes to ensure the completion of the berthing facility before the ship delivery, it is exploring the possibility of assistance from JICA. This is quite a meaningful project which can address the two major problem areas of Dili Port, yard congestion and lack of safety.

Germany is also involved in the capacity development in the maritime sector. GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) has made five million Euros available for this area. GIZ assisted the implementation of PFSA (Port Facility Security Assessment) and PFSP (Port Facility Security Plan) in 2013 through consulting services of STET Maritime. GIZ's assistance includes administrative reforms of APORTIL (separation of regulatory functions), capacity building of government officials, and preparation for the ratification of maritime conventions.

(3) USA

USCG (US Coast Guard) visited Dili Port in 2008 to carry out a review of security measures relating to the ISPS code. After meeting with officials and making site inspections, it identified problem areas relative to port security and concluded that security measures meeting the ISPS code requirements were not in place in Dili Port. This report was made available to the Government of Timor-Leste. The US government continues to be interested in accelerating the implementation of the ISPS code in Timor-Leste and USCG plans to visit the country again in December 2013 to carry out an audit.

1.2. Present Conditions and Records of Upgrades of Facilities in the Port of Dili

1.2.1. Wharves, Aprons, Yard Area, and Storage Facilities

(1) Wharves

Berth of Dili port has total length 289.2m and its depth is from 5.5m to 7.5m. The length of 180m

of berth, between BL 1 and BL 4, has been rehabilitated and completed in 2009 by JICA's grant aid. Remaining 109.2m length of berth, which was constructed in 1997, will be expected rehabilitation due to development of deterioration seriously.

Dili port has two ferry routes with Oecusse located at west Timor Indonesia as detached territory of Timor-Leste, and with Atauro located at Atauro Island of the opposite bank of Dili port. There is no jetty for ferry-boat but slipway is used to landing place for passenger and vehicle taking down a ramp on the slipway.

Table 1.2-1 Wharves of Dili Port

Berth Block Number	Length (m)	Width (m)	Depth (m)	Location	Description
Berth 289.2m	1	45.0	20.1	In front of passenger terminal	Construction in 1993, by Indonesia. Rehabilitation in 2009, by Japan
	2	45.0	20.1		ditto
	3	45.0	12.0		ditto
	4	45.0	12.0		ditto
	5	60.2	12.1	Western part of pier	Construction in 1997, by Indonesia
	6	49.0	12.1	End of western part of pier	Construction in 1997, by Indonesia Improvement in 2002, by ADB
Ferry landing place				East container yard	A slipway has been installed.

Source: APOLTIL



Figure 1.2-1 Mooring Facilities of Dili Port



Figure 1.2-2 Landing of Ferry and Berthing of Cargo Ship

(2) Aprons

An apron and following back yard are used for cargo handling facility in Dili Port. In this port, import cargo is dominant over export cargo. General cargo and bulk cargo are unloaded from vessel directly on track, then goes out of the port through the gate after completion necessarily documentation. Meanwhile, container cargo is temporarily stacked at container yard, and after finishing the prescribed procedure, container cargoes are carried out from the port to consignee. Loading and unloading of cargo including container is mainly used ship's crane, and cargo handling operation is carried out by private stevedoring company. One rafter crane owned by stevedoring company is used in the port, but this is not rent out other companies.

Apron has a total length of 298.2m and three kind of width of 20.1m, 12m, and 12.1m, length of 180m from east end has been rehabilitated and completed at 2009 (See Table 1.2-1, Figure 1.2-3).

In addition, open space behind the apron of BL3 and BL4 should be reclaimed for preventing dangerous cargo operation. This rehabilitation work is already budget, thus immediate implementation of the work is expected.

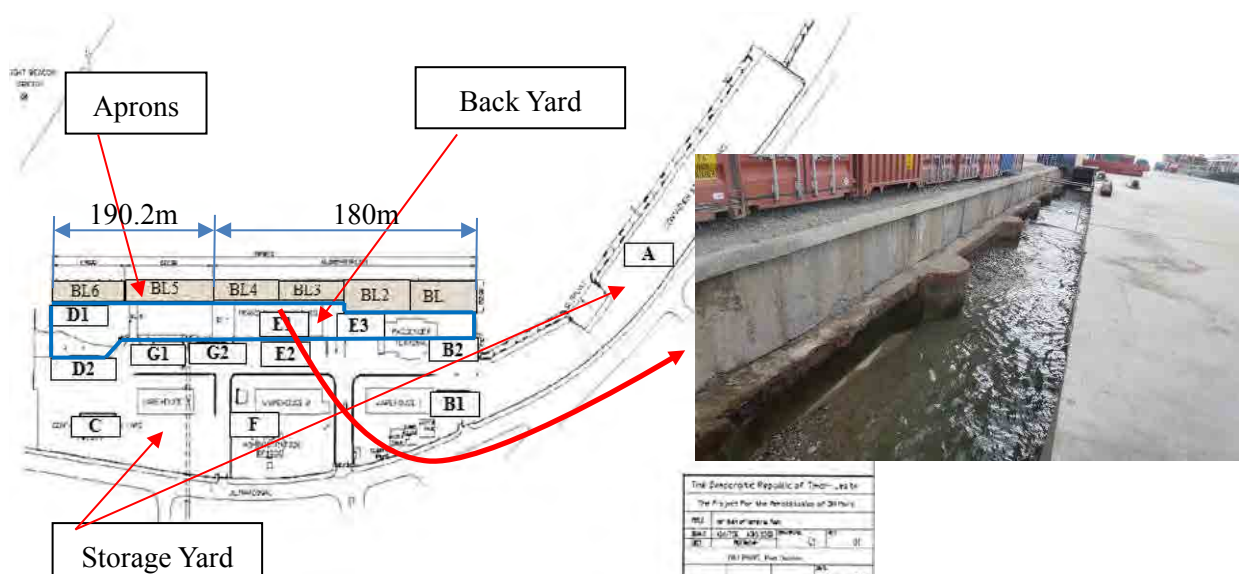


Figure 1.2-3 Layout of Cargo Handling Facilities and Open Area behind of Berth BL4 and BL5

(3) Yard Area

Outmoded layout of a port facility such as warehouse and passenger terminal makes a usage of the port to be inefficient in Dili Port. Different ground level between back yard and storage yard is connected by slope, operator has to take care of driving a cargo handling vehicle in keeping low speed to prevent a load shifting and on one side on the slope. The port yard except warehouse and passenger terminal is mainly dedicated to container stacking yard and marshaling yard, and is allocated at east/west of the yard, and behind the berth. East container yard is used for stacking of 20ft container and west is for 40ft. The directly behind space of berth is utilized for empty container, tank-type container and reefer container (see Table 1.2-2, Figure 1.2-4).

Table 1.2-2 Yard Usage of Dili Port

Yard	Area (m2)	Description
A Container storage yard (20ft)	11,000	
B1 Container storage yard (empty)	532	Reefer
B2 Container storage yard (empty)		
C Container storage yard (40ft)	3,190	
D1 ISO Tank	1,685	
D2 Dangerous cargo		
E1 Marshaling Yard		
E2 Marshaling Yard	2,013	
E3 Marshaling Yard		
F Vehicle Storage Area	-	
G1 Open Storage for Construction Materials	250	
G2 Open Storage for Construction Materials		
Total	18,670	

Source: Prepared by the Study Team based on the information by APORTIL

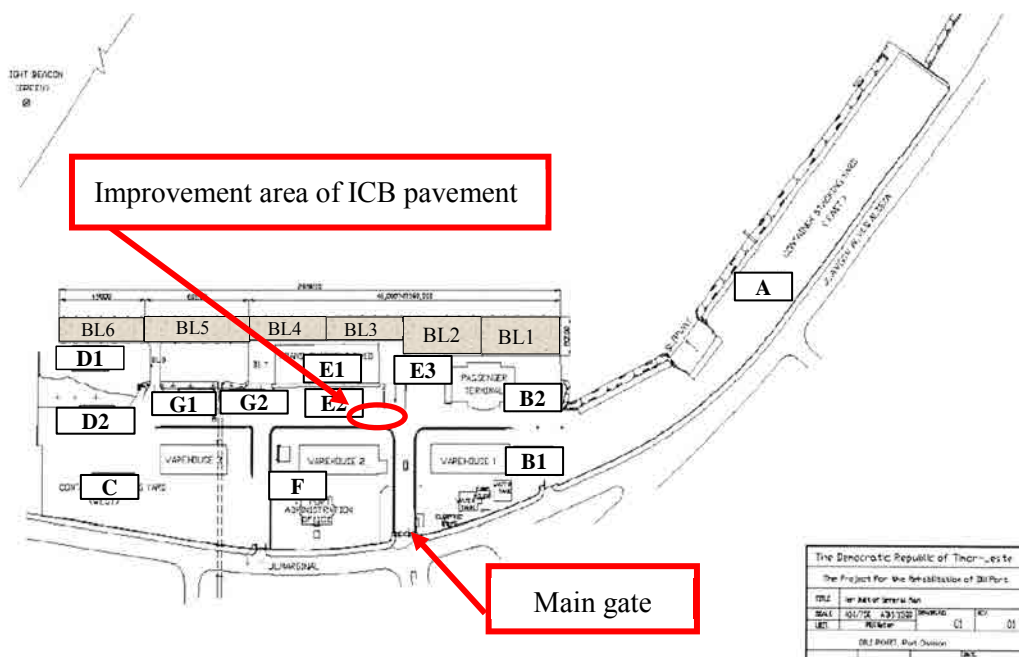


Figure 1.2-4 Yard Layout of Dili Port

Pavement of container yard paved by interlocking concrete block (ICB pavement) is partially deteriorated seriously such as being turned up of the surface at eastern part of west yard. Particularly, from the security view point, damaged pavement is dangerous for cargo operation and thus rehabilitation is needed immediately.

Addition to this, it has been unsafe that a drainpipe with hole have been left on a passage where many passenger passing through to/from ferry landing place at east yard. It is possible that it will be a bad influence on efficiency of cargo operation, therefore repairing of the hole is required strongly.

In the west side yard, repair of pavement has begun at places on the side to the west when

entering the front gate. Blocks at deteriorated places were removed and the base course below it was smoothed and roller compacted, and then new blocks were placed and roller compacted. This rehabilitation area of ICB pavement has completed until end of November (see Figure 1.2-5 and Figure 1.2-6).



Figure 1.2-5 Deterioration Area of Pavement and Cave-in Point



Figure 1.2-6 Improvement Area of ICB Pavement at West Side of the Yard

APORTIL has been no idea to count the number of container ground slots in the yard caused by container operation have been carried out by private stevedoring company. The Study Team conducted site survey to make clear the number of ground slots, accordingly, 260 slots is in east yard and 203 slots in west yard, totally 463 slots in the container yard (see Table 1.2-3, Figure 1.2-7).

The stacking level of storage container is set to be three in both side of east and west yard, average dwell time is five days in import and one day in export. If the dwell time is exceeded five days in import, a stevedoring company will be charged demurrage.

Table 1.2-3 Ground Slot Numbers of Container Yard

(Unit: TEUs)

Container Yard	Laden	Empty	Total
East yard	260	0	260
West yard	120	83	203
Total			463

Source: Prepared by the Study team

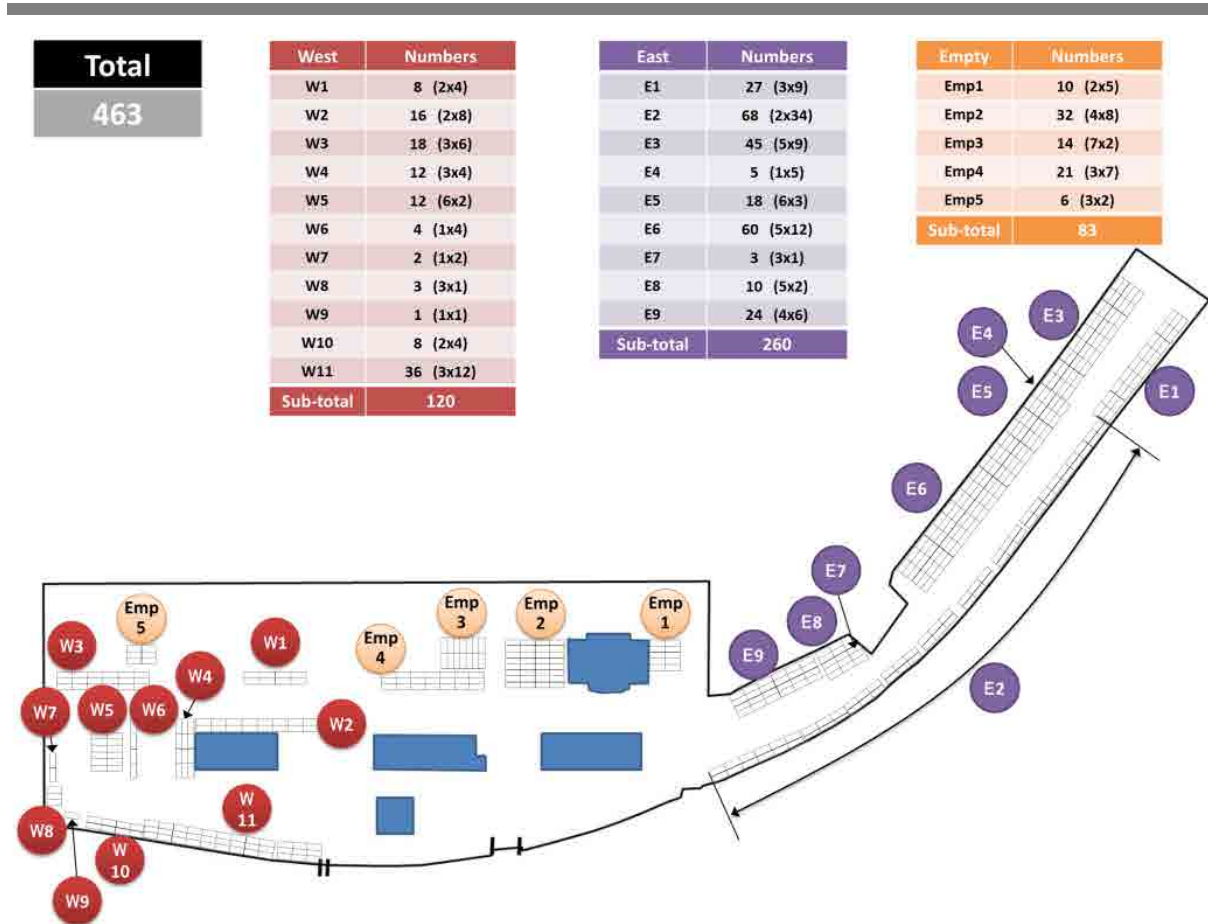


Figure 1.2-7 Ground Slot Allocation of Dili Port

From the beginning of October, APORTIL has launched leveling of land for dry port at Tasitolu about 9km west from Dili expect to start January 2014.



Figure 1.2-8 Candidate Land of Dry Port (Off-dock Yard) at Tasitolu



Figure 1.2-9 Dry Port under construction at Tasitolu (as of November 2013)

(4) Storage Facilities

The storage facilities of Dili Port consist of four warehouses. Warehouse 1 is now used as the offices for the customs service and for APORTIL, and Warehouse 2 is used to store imported motorcycles. As the volume of imports has increased, part of Warehouse 1 is currently being used for imported motorcycles. Warehouse 3 is used for cargoes requiring emergency handling, but cargoes are not stored there regularly, so it would not be correct to say that it is used efficiently. It would be difficult to expand the port area; therefore, to use the port land effectively and reduce congestion, it will be necessary to revise the port land utilization plan, including the removal of Warehouse 3.

Table 1.2-4 Storage Facilities of Dili Port

Name of facilities	Specification	Number	Description
Warehouse No.1	45.5 X15.3m =696.2m ²	1	
Warehouse No.2	45.5 X15.3m =696.2m ²	1	
Warehouse No.3	38.0 X15.4m =585.2m ²	1	
Transshipment Shed	50.0 X16.0m =800.0m ²	1	Behind BL5

Source: APORTIL



Figure 1.2-10 Storage Facility Arrangement in Dili Port

1.2.2. Port Roads and Passenger Terminal

(1) Port Roads

The major road to Dili Port is Portugal Avenue that parallels the seacoast and passes in front of the gate to the port, and which vehicles use to enter and leave the port. Another is Presidente Nicolau Lobato Street, which comes from the west side of the port to converge with Portugal Avenue where it passes the East Gate, and also carries heavy traffic. These two roads are used mainly by trucks entering and leaving Dili Port. They use these two roads to connect to arterial roads leading inland to distribute and collect cargoes throughout the country. Figure 1.2-11 shows the major road network behind Dili Port and Figure 1.2-12 shows the state of roads near the port.



Figure 1.2-11 Major Road Network Connecting to Dili Port

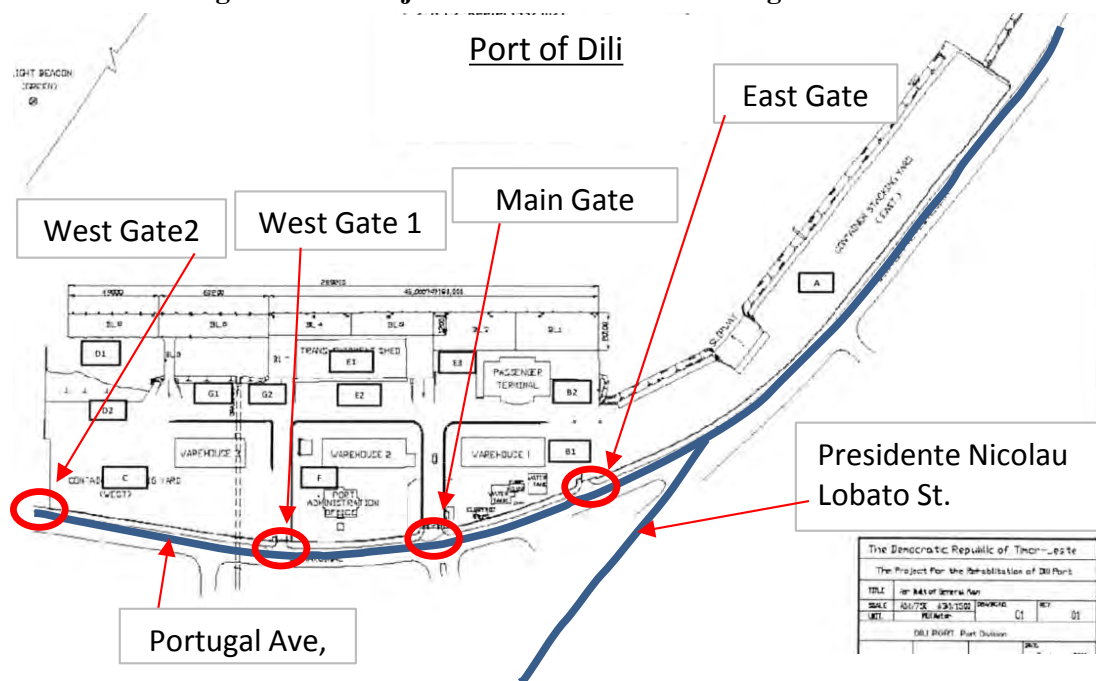


Figure 1.2-12 Major Port Side Road Surround the Dili Port

(2) Passenger Terminal

Passenger facilities include a ticket sales office, passenger terminal, and ferry landing, but the passenger terminal is not used at this time. Ferry passengers enter and leave through the passenger use gate (East Gate), go directly to the ferry landing, and board the ferry by crossing an inclined ramp. Because the ferry landing is inside the container yard, the line of motion of passengers crosses the container marshaling work area, endangering the passengers. The container work cannot be performed efficiently, because it must be interrupted.

In response to the new ferry beginning service, moving the port ferry landing to the west side is proposed. If this is done, work inside the container yard will be performed effectively, and passengers

will be kept outside of this dangerous environment.



Figure 1.2-13 Layout of Passenger Facilities

1.2.3. Port Administration Facilities

Port management facilities are shown in Figure 1.2-14. The major port management functions are in the administration office, with the former passenger terminal and part of the site of the No. 2 warehouse used as offices to manage the site.

The rise of the volume of cargoes has increased cargo handling work of the port, and there is a shortage of land inside the port, so that it is now impossible for the work of the port to be carried out efficiently. The sites occupied by the warehouses and former passenger terminal on the other hand are also not used effectively. Therefore, to provide more land inside the port, a port land utilization plan including the removal of the warehouse and the passenger terminal should be considered.



Figure 1.2-14 Layout of Port Administration Facilities

1.2.4. Channels, Basins, and Navigational Aids

The entrance to the channel into the Port of Dili is clearly indicated by navigation buoys, and ships pass between the buoys to enter the port. But because there are parts of the channel into the port where the water is shallow—between 6 or 7m—ships enter the port avoiding these locations (see Figure 1.2-15).

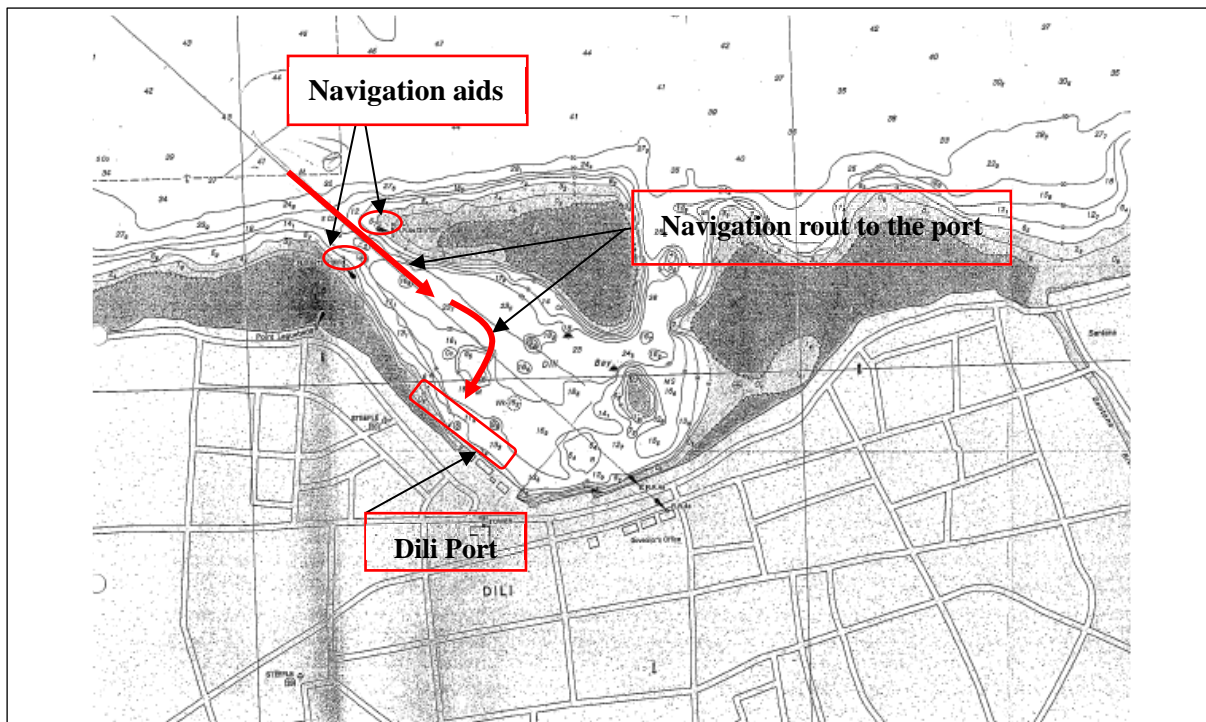


Figure 1.2-15 Navigation Aids and Navigation Rout to Dili Port

Pilot services are not provided in this port, so all ships are guided close to their berth by radio. Anchorages are distributed at 14 locations from D1 to D14 in areas on the ocean side of the channel entrance where the water is deeper than 34m, and ships drop anchor at locations indicated in instructions by the port master (see Figure 1.2-16).

Periodical maintenance dredging is not done in this port, but dredging is done after sedimentation has progressed, reducing the depth of the water in front of berths. At this time, dredging has been planned, and sounding in already completed and dredging was started about 10m depth as of 2013.

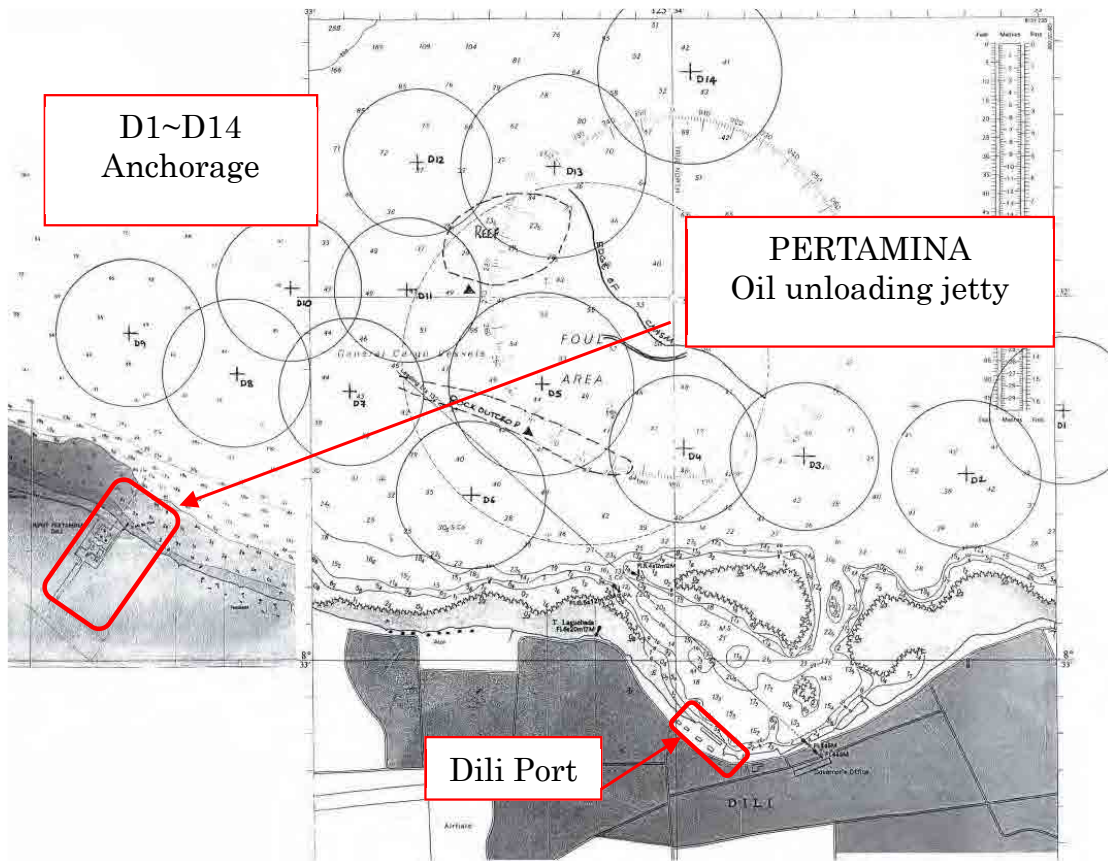


Figure 1.2-16 Anchorage Arrangement Outer Dili Port

1.2.5. Cargo Handling Equipment

Cargo handling in Dili Port is entirely performed by private stevedoring companies: APORTIL performs none of this work. Private companies provide all the required cargo handling machinery, and the loading and unloading of cargoes to and from ships is basically done using ship cranes. Private companies independently maintain their own cargo handling machinery. Table 1.2-5 shows the major cargo handling machinery used at this port.

Table 1.2-5 Major Cargo Handling Equipment

Name of equipment	Specification	Number	Description
Reach Stacker (old)	30~40t	4	
Fork Lift	20~30t	3	
Rafter Crane	50t	1	

Source: Prepared by the Study Team based on the information by APORTIL

1.3. Operation of the Port of Dili

1.3.1. Wharves

Dili port is basically operational 24 hours a day, but entry into port is limited to daytime (7:30 a.m. to 5:00 p.m.). After a notification to the harbor master at the time of entry, the harbor master decides the berth assignment and indicates where the entry ship should dock based on LOA, draft, type of cargo and so on. Wharves are operational 24 hours a day, 363 days a year; 18 shipping agencies do business in Dili port as listed in Table 1.3-1. It is alleged that average dwelling days of containers at the terminal is around 5 because charges are applied for more than 5 days.

APORTIL directly conducts mooring, unmooring and fee collection. A list of fees is shown below.

➤ Navigation Fees

Navigation fee per entry into port for each GRT	USD 0.06/GRT
A vessel of up to 100 GRT	USD 600

➤ Dockage Fees

A vessel that docks at any berth, uses a ramp or a mooring buoy in a port of Timor-Leste	USD 0.025/GRT/hour
A vessel that uses any other point between the ports of Timor-Leste, for the purpose of carrying out a commercial operation	USD 0.15/GRT/hour

➤ Wharfage Fees

Cargo Category	Unit	Charge
Bulk Cargo		
Liquid products	kiloliter	USD1.20
Dry products	ton	USD1.80
Breakbulk Cargo	m3/ton	The greater of USD 1.80 per cubic metre or USD 1.80 per ton
Containers		

Up to 20-foot length	Unit	USD35.00
In excess of 20-foot length	Unit	USD80.00
Empty Containers		
Up to 20-foot length	Unit	USD15.00
In excess of 20-foot length	Unit	USD40.00
Motor vehicles		
Less than 6 metres in length	Unit	USD50.00
More than 6 metres in length	Unit	USD100.00

➤ **Mooring & unmooring Fees**

Mooring and Unmooring	Mooring and Unmooring without the use of boats	Shifting alongside (per manoeuvre)
USD 250.00	USD 120.00	USD 120.00

➤ **Warehouse and Container Storage Fees**

Type of Storage	Storage period	
	Initial 5 days	From day 5
warehouse per each fraction of 10m3 and per indivisible workday		
In unroofed spaces	Free of charge	USD 0.6
In warehouses	USD 0.6	USD 2.0
Containers per unit and per indivisible workday		
up to 20 feet of length	Free of charge	USD25.0
more than 20 feet of length	Free of charge	USD60.0

➤ **Vehicles Storage Fees**

Type of Storage	Storage period	
	Initial 3 days	From day 3
Vehicles		
< 6 metres of length	Free of charge	USD25.0
> 6 metres of length	Free of charge	USD60.0

Source : Regulation of port fees and charges, Decree-Law No.19/2003

Table 1.3-1 List of Shipping Agency

SDV	Laba Dayn Diak
Ariana Oceania	Providencia
Atauro Exptress	Lady Tasi Mane
Crocodile Ajensia	Ocean Spirit
Maritime Service Agent	Campanha Burira

Bethoben Line Ajensia	Timor Bonuk
Biqueli Oceania Ajensia	Asia Sat
Lai Ara Ajensia	Uailaha Ajensia
Haburas Timor Ajensia	Laga Lda.

Source : APORTIL

The Study Team estimated port fees on a trial basis. Total cost for a general cargo vessel was US\$ 19,950 in the case of a vessel of 3,000 GRT, carrying 5,500 t of cargo and staying for 130 hours. The cost for a container vessel was US\$ 17,550 in the case of a vessel of 3,000 GRT, carrying 300 TEU, and staying for 30 hours. (Table 1.3-2 and Table 1.3-3)

**Table 1.3-2 Trial Estimation of Port Fees for General Cargo Vessel
(3,000GRT, 5,500t, 130hours*1)**

Items	Fees	Remarks
Navigation Fees	USD 180	USD 0.06*3000GRT
Dockage Fees	USD 9,750	USD 0.025*3000GRT*130hours*1
Wharfage Fees	USD 9,900	USD1.80*5,500 t*2
Mooring & unmooring Fees	USD 120	
TOTAL	USD19,950	

*1: derived from Table 2.1-2

*2: assumed based on "GRT=0.529DWT"

Source: Technical Standards and Commentaries for Port and Harbor Facilities in Japan

**Table 1.3-3 Trial Estimation of Port Fees for Container Cargo Vessel
(3,000GRT, 300 TEU, 30hours*)**

Items	Fees	Remarks
Navigation Fees	USD 180	USD 0.06*3000GRT
Dockage Fees	USD 2,250	USD 0.025*3000GRT*30hours*
Wharfage Fees	USD10, 500	Import (Laden) : 300TEU* USD 35
	USD 4,500	Export (Empty) :300TEU* USD 15
Mooring & unmooring Fees	USD 120	
TOTAL	USD 17,550	

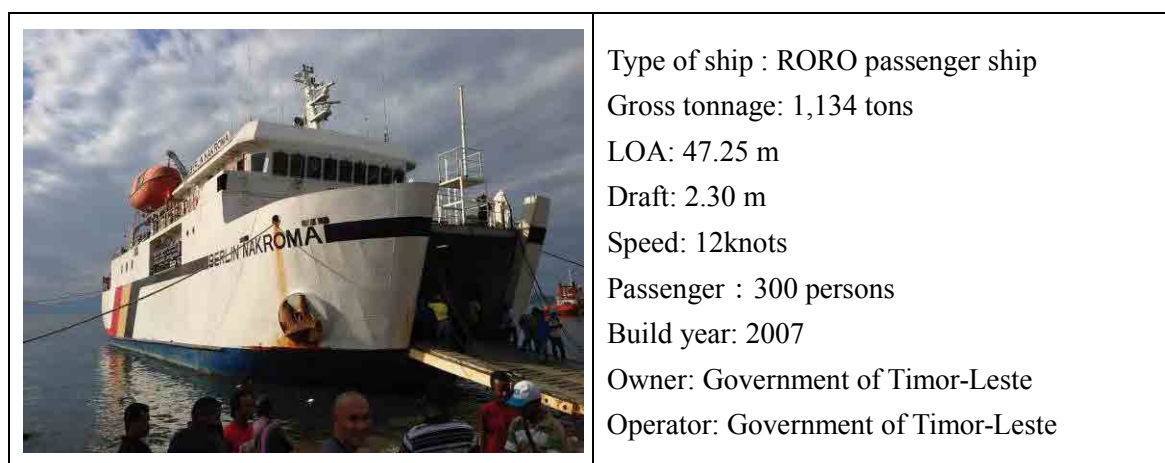
* derived from Table 2.1-2 Table 2.1-1

1.3.2. Other Facilities

Two gates (main and west) are available at Dili port and they are operational 24 hours a day, 363 days a year as well as wharves. However, the west gate is only used for carrying-out, and full

containers are available only from 8:30 a.m. to 5:00 p.m., while empty containers are available all day.

APORTIL operates 2 ferry services connecting the enclave of Oecusse and the remote island of Atauro. A ferry service to Oecusse is operated twice a week on Monday and Thursday and one to Atauro is operated once a week on Saturday. Passenger terminal building is damaged and out of service (it is being rented by some shipping agencies), but temporary souvenir shops were open when an irregular cruise ship entered Dili port during this JICA study period. Ferry tickets are sold in Dili port before the operations. Schedule of ferry services is shown in Table 1.3-4 and price list of ferry services is shown in Table 1.3-5.



Source : APORTIL

Figure 1.3-1 Outline of the Ferry “NAKROMA”

Table 1.3-4 Schedule of Ferry Services

	DILI	OECUSSE	ATAURO
Monday	17:00depart		
Tuesday		05:00arrive 17:00 depart	
Wednesday	05:00 arrive		
Thursday	17:00 depart		
Friday		05:00 arrive 17:00 depart	
Saturday	05:00 arrive 09:00 depart 18:00 arrive		12:00 arrive 15:00 depart
Sunday			

Source: APORTIL

Table 1.3-5 Price List of Ferry Services

Cargo Category	to OECUSSE	to ATAURO
Passenger		
VIP Class	USD 20	USD 10
Business Class	USD 14	USD 4
Economy Class	USD 4	USD 2
General Cargo		
per ton	USD 20	USD 10
per cubic metre	USD 20	USD 10
Vehicle		
Motorcycle	USD 15	USD 10
Automobile, Pickup jeep	USD 115	USD 50
Minibus, Dump truck(empty)	USD 150	USD 80
Minibus, Dump truck(full)	USD 200	USD 120
Animal		
Cow, horse	USD 10	USD 5
Goat, pig	USD 5	USD 2

Source : APORTIL

1.4. Port Performance

1.4.1. Cargo Traffic

Container ship services of Meratus (Surabaya-Dili: 3 calls a month) and Swire Shipping (Singapore - Dili - Darwin: every 9 days) are available at Dili port, and it would appear that there are a few transship cargoes of Papua New Guinea. Containerized Cargo volume is basically on a rising trend since 2007. The majority of imported container cargo is general merchandise and so on, while almost all of export is empty containers. There are some export containers of coffee which is the only domestic industry in Timor-Leste.

General cargo, a large portion of which is cement and rice, has increased steadily in these years. It increased by around 50% from 2007 to 2012. On the other hand, there has been no general cargo export since 2009.

Vehicle is on a declining trend unlike container and general cargo. Higher figures in 2004 and 2005 are assumed to be due to import and export of international organizations such as the United Nations.

Table 1.4-1 Cargo Throughput

	Containers(TEU)			General Cargo (ton)			Vehicles (unit)		
	Imp.	Exp.	Total	Imp.	Exp.	Total	Imp.	Exp.	Total
2003	10,465	10,148	20,613	38,552.10	2,085.84	40,637.94	671	194	865
2004	10,792	11,266	22,058	57,885.27	5,307.80	63,193.07	1,620	274	1,894
2005	7,640	7,514	15,154	103,495.58	1,475.02	104,970.60	414	67	481
2006	8,232	6,909	15,141	106,810.44	68.12	106,878.56	412	116	528
2007	11,208	10,990	22,198	126,171.55	1,658.67	127,830.22	868	119	987
2008	12,069	10,798	22,867	133,984.00	289.30	134,273.30	563	2	565
2009	16,493	15,947	32,440	154,572.66	0.00	154,572.66	915	0	915
2010	18,823	17,993	36,816	141,954.00	0.00	141,954.00	411	0	411
2011	21,771	19,613	41,384	226,393.00	0.00	226,393.00	346	0	346
2012	23,122	22,486	45,608	183,457.00	0.00	183,457.00	217	0	217

Source : APORTIL

1.4.2. Passenger Traffic

APOINTIL operates the NAKROMA which is a ferry ship donated by Germany connecting the enclave of Oecusse and the remote island of Atauro, and plays an important role in transporting daily necessities and residents

The number of passenger has increased slightly in the six years since 2006 when civil unrest occurred, while cargo volume has been growing steadily but has not yet reached the peak level of 2007. The performance in 2009 was quite low compared to passenger, cargo volume and port calls because of long-term docking in Surabaya, Indonesia.

Table 1.4-2 Throughput of Ferry Services

	Passenger(person)			General Cargo (ton)			Port call		
	Oecusse	Atauro	Total	Oecusse	Atauro	Total	Oecusse	Atauro	Total
2007	24,404	12,483	36,887	4,600	2,306	6,906	66	36	102
2008	34,779	20,337	55,116	2,038	307	2,345	86	43	129
2009	9,258	6,813	16,071	617	152	769	28	15	43
2010	38,680	23,705	62,385	2,396	194	2,590	98	52	150
2011	32,829	19,621	52,450	3,160	264	3,424	87	45	132
2012	33,834	22,326	56,160	2,760	146	2,906	99	52	151

Source : APORTIL

1.5. Port Management

1.5.1. Institutional Arrangement

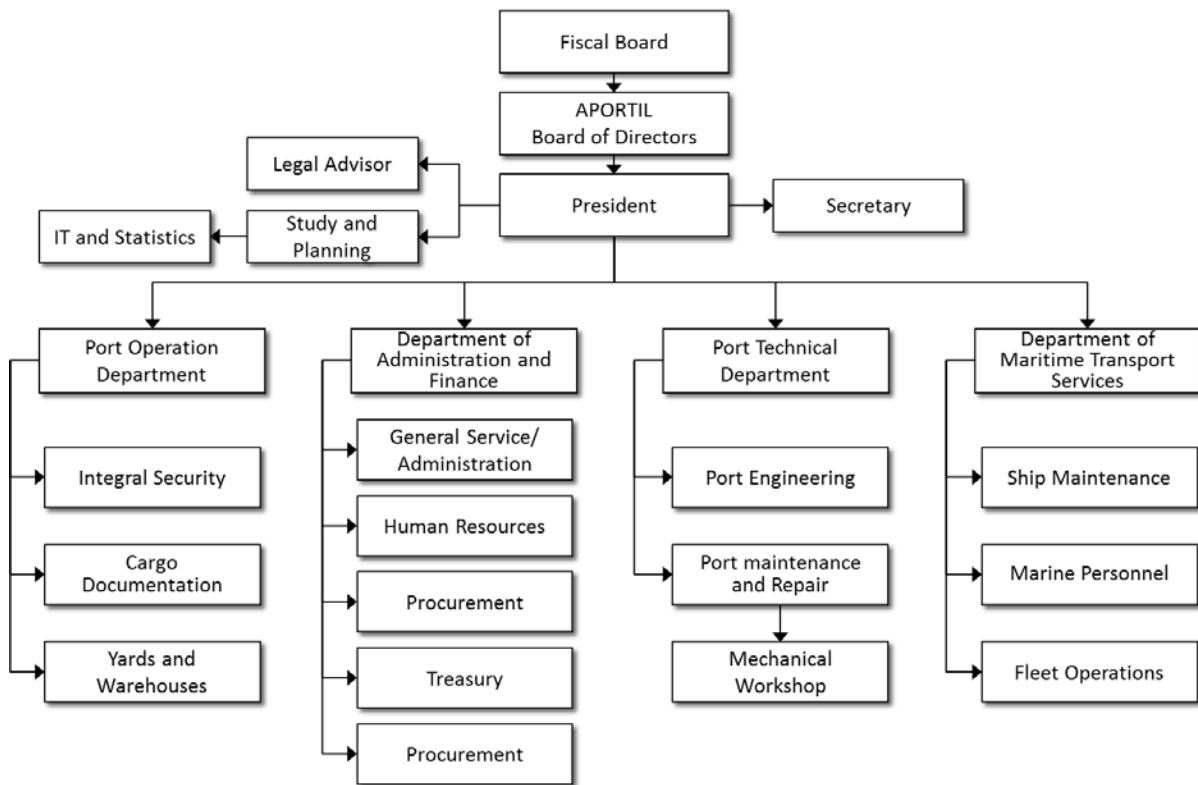
Generally, port authorities in the world are charged with the following tasks.

- To create policies on marine traffic safety
- To create plans on development of ports and navigation channels
- To establish port regulations
- To administrate ports and navigation channels
- To construct and maintain port facilities and equipment
- To manage navigation channels
- To conduct maritime education and training

In Timor-Leste, APORTIL, the National Port Authority of the Ministry of Transport and Communications, is responsible for the management of Dili port which is the only international trading port and any other matters concerning the port sector. However, the new port development at Tibar is administrated by the National Development Agency (ADN) which is directly under the prime minister together with MPS and IFC.

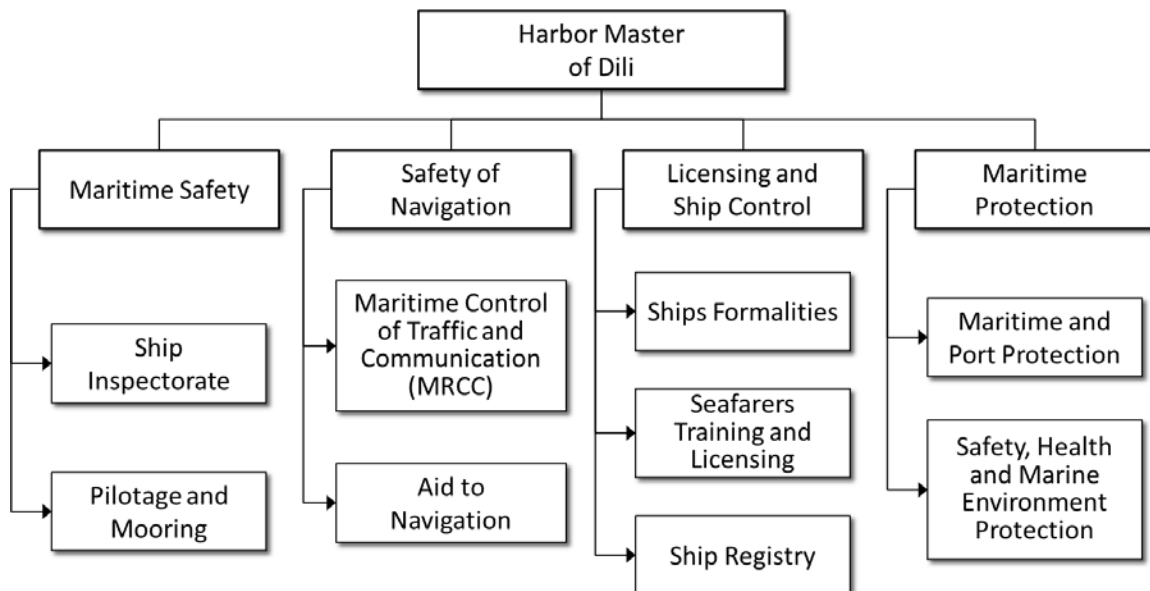
As of November 2013, APORTIL is now under reformation with the assistance provided by GIZ, which includes maritime department's separation from APORTIL and reorganization under the Harbor Master. This reformation has been already approved and is expected to be implemented in the near future. According to this, APORTIL will have 41 employees and 5 departments which are Study & Planning, Administration & Finance, Technical, Operation and Maritime Transport Services under the Director (Figure 1.5-1, Figure 1.5-2).

The organization for maritime sector which has been reformed under the Harbor Master with 14 employees is expected to be strengthened and renamed as the National Directorate of Maritime Transport (DNTM) in the future. (see Figure 4.1-4)



Source : APORTIL

Figure 1.5-1 Organization of APORTIL (as of November 2013)



Source : APORTIL

Figure 1.5-2 Provisional Organization of Harbor Master (as of November 2013)

1.5.2. Stevedoring

Four private companies (Timor Stevedoring, TLS, Lai Ara, TOLL) conduct stevedoring at Dili port using their own cargo handling machinery and staffs.

Although there is no pilot service, private companies of Indonesian and Singapore operate three tugboats in Dili port.

1.5.3. Maintenance of Equipment and Infrastructure

(1) Maintenance of cargo handling equipment

In Dili Port, cargo handling is performed entirely by private sector port stevedoring companies, which provide all required cargo handling machinery. Each of these private companies maintains its own cargo handling machinery.

At this time, APORTIL does not require private companies to submit lists of cargo handling machines that they use, but they are, as port managers, obligated to clarify the cargo handling machines they use in the port and must keep records as lists. And to prevent interruption of the work or accidents caused by defective machinery, it is important for the public and private sector to both be willing to order inspections and improvements and take measures to perform cargo handling inside the harbor more efficiently, and to take action to achieve these goals. Through such actions, Dili Port can be managed efficiently.

(2) Maintenance of port facilities

Regarding maintenance and management of the port facilities, ledgers of major facilities which are the foundation for maintenance and management are not provided, there are no maintenance and management manuals, and periodical inspection work is not done. But preparations are being made for maintenance and management. For example, JICA short-term experts held a maintenance and management seminary in January 2010, and work is underway to provide preliminary manuals or prepare inspection lists etc. In 2013, under guidance by JICA experts, these lists were used to inspect berths BL5 and BL6. Based on the results, many locations on the beams and the bottom surface of slabs of the berths were found to be in urgent need of repairs, and locations on paving of improvements and locations where further repairs are necessary have been photographed.

In the future, it will be important to follow up on the periodical inspections done using these lists with preventive maintenance type management. Figure 1.5-3 shows records of inspections performed in 2013.



Figure 1.5-3 Results of Inspection Performed in 2013

1.5.4. Environmental Considerations

(1) Necessity of waste disposal

We saw places where waste matter produced by port work and ferry use remains inside the port. It is necessary to enact procedures and rules stipulating which department is in charge of collecting and disposing of waste matter and how it must be done, and to inform port users of these procedures and rules.



Figure 1.5-4 Garbage Collection Place

(2) Environmental countermeasure at workshop

Because private sector companies handle cargoes, these same private sector companies manage the cargo handling machinery. A combined storage area for cargo handling machines that have completed their work and a work shop area is located near the entrance to the East Gate, but there are locations where the ground has been contaminated by oils such as fuel or lubricating oil leaking from some of the machinery.

APORTIL does not perform any work directly, but obligates the cargo handling companies to maintain the work environment in good condition, and must provide guidance and supervision to any of the private companies that do not comply with this obligation.



Figure 1.5-5 Oil Leak and Contamination in Workshop

1.6. Port Security

1.6.1. Facilities and Equipment

(1) Gate

There are 4 gates in the port. Access control is mainly conducted at 3 of the gates.

East Gate is used solely for passengers and Ro-Ro vehicles. APORTIL manages the ferry operation by itself, however, the access control is conducted by 2 parties (APORTIL and Maritime Police). Passengers are controlled by APORTIL and ferry tickets by Maritime Police.

The physical condition of the gate is fairly good. Gate has a width of 7.50m and a height of 2.50m (Figure 1.6-1).

The passengers who are going/coming to/from ferry use the pedestrian crossing (width of 1.70m) between the container stacking yard and main fence (Figure 1.6-6). However, the passengers' passage and the traffic route of container vehicles cross one another just in front of the berthing place of ferry. Therefore, it is a concern from a viewpoint of safety.

Access control of the in-coming/out-going cargoes, drivers and vehicles is being conducted at the

Main Gate by the continuously stationed 3 parties (mentioned in Section 1.6.2). Therefore, their work assignments are difficult to understand. ID check is not conducted properly.

The physical condition of main gate is good and it is maintained accordingly. The gate has a width of 9.70m and a height of 2.50m (Figure 1.6-2).

West Gate 1 serves for the access control of out-going containers only. X-ray scanning of container is conducted by Customs. However, the scanning is not conducted for all containers but rather on suspicious containers by document check.

The physical condition of the gate is fairly good. The security system conducted by APORTIL is also good. The width is 8.00m and the height is 2.50m. The gate is closed at night from 17:00 (Figure 1.6-4).

West Gate 2 is ordinarily closed except in case of emergency or the transport of imported timbers etc. Two security guards should be stationed at the gate, however sometimes, no security guard was present. The physical condition of the gate is fairly good. However, the height is not sufficient from the viewpoint of port security. The width is 6.60m and height is 1.80m (Figure 1.6-5).

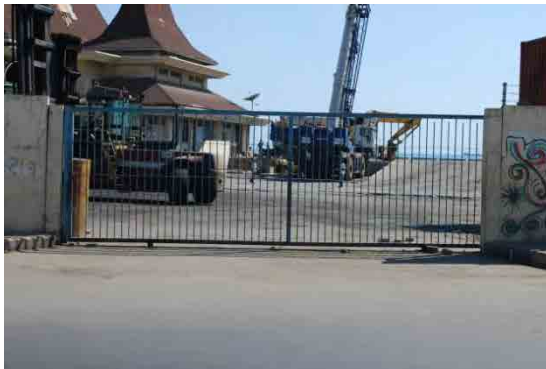


Figure 1.6-1 East Gate



Figure 1.6-2 Main Gate



Figure 1.6-3 Interior Gate of Main Gate



Figure 1.6-4 West Gate 1



Figure 1.6-5 West Gate 2



Figure 1.6-6 Pedestrian for Ferry Passengers

(2) Fence

The port is surrounded by 3 fences with different structural types (East Fence, Main Fence along the Portugal Avenue, and West Fence).

East Fence is concrete block and mortar structure. It has thickness of 30cm and a height of 3.00m with barbed-wire on the top (Figure 1.6-7). It is observed the fence fulfills the security function. However, there is no security measure to prevent an intrusion from outside at the seaside edge of the fence (Figure 1.6-8).

Main Fence is a steel structure with 3 lines of barbed-wire on the top (Figure 1.6-9). The total height is 2.80m. Part of the barbed-wire is corroded, however, it is observed that the fence fulfills the security function properly.

West Fence has some problems. The structure consists of concrete columns and steel. There are many parts corroded in the steel structure (Figure 1.6-11). Urgent countermeasures are required. Furthermore, the same as the East Fence, there are no security measures to prevent an intrusion from outside at the seaside edge (Figure 1.6-12).

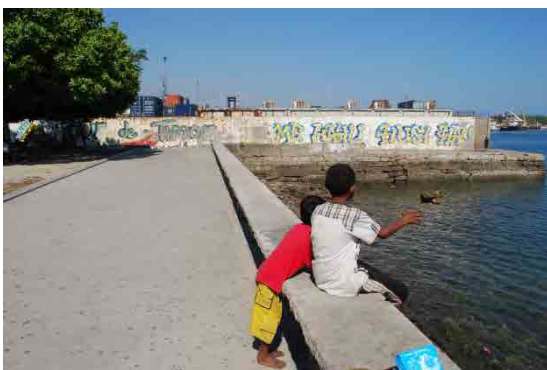


Figure 1.6-7 East Fence



Figure 1.6-8 East Fence Seaside Edge



Figure 1.6-9 Main Fence



Figure 1.6-10 West Fence



Figure 1.6-11 West Fence (Eroded Area)



Figure 1.6-12 West Fence Seaside Edge

(3) Yard Light

The system such as lighting range and intensity shall be examined from the viewpoint of port security. Furthermore, it is recommended that one additional security light be installed on the west edge of the port premises to improve security.

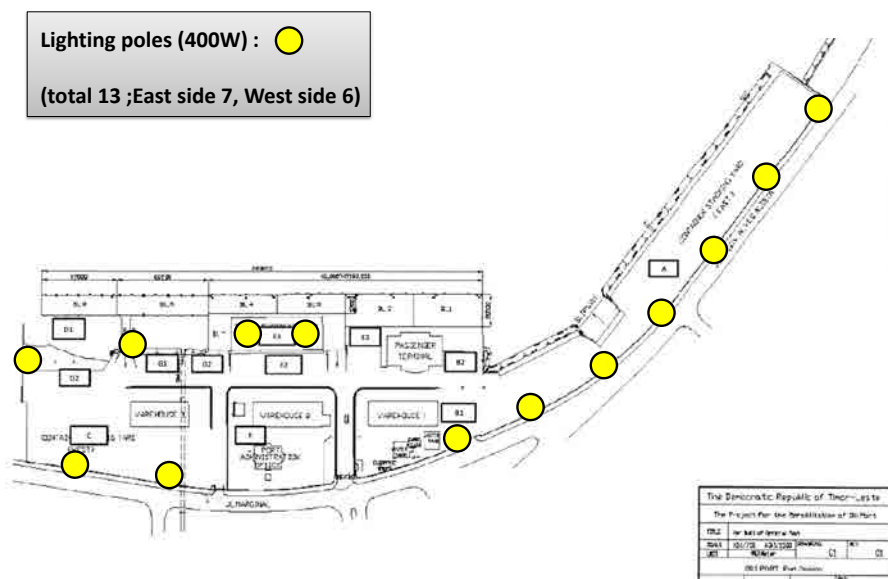


Figure 1.6-13 Layout of Yard Light

(4) X-ray Container Scanner

The scanner which was obtained through Japanese grant aid is in need of repair. This scanner entered operation in February – March 2009. It began to malfunction in 2010 and broke down in 2012. The cause of trouble was not identified. A request to repair the scanner has been made to the Japanese government. The equipment is HCV CAB 2000 manufactured by Smith Detection Company.

However, two movable scanners newly obtained through a grant from China are in working order (Figure 1.6-14). The operation and maintenance are done by Customs.

(5) Fire-fighting Facility

Fire hydrant and fire extinguishers are equipped in the port. However, their functions should be examined. Fire engine is not deployed.

(6) Fence of Lighthouse

A lighthouse is located about 600m west from the port. It fulfills its functions well. However, the surrounding fence is mostly corroded (Figure 1.6-15) and requires urgent repair.



Figure 1.6-14 X-ray Scanner & Customs



Figure 1.6-15 Fence of Lighthouse

1.6.2. Institutional Arrangements

East Timor has not yet ratified the International Maritime Organization (IMO) SOLAS Convention (although a legislative bill has been tabled in the Diet in order to ratify the Convention). The port security framework based on the ISPS Code has not been established in the port at present. Port Facility Security Assessment (PFSA) has already been done and Port Facility Security Plan (PFSP) based on the PFSA has also been developed accordingly in November 2013 with assistance provided by GIZ.

The Restricted Area is not indicated in the proper manner. As mentioned in Section 1.6.1, the ferry passenger's passage and the traffic route of container vehicles cross one another in the port yard.

The main entity responsible for conducting port security in Dili port is APORTIL. However, as mentioned in the description of the Main Gate, the access control is conducted by 3 organizations; Gardamo Security Service Company employed by APORTIL, Civil Security, and Maritime Police. Their competent authorities are different respectively. Therefore, it is difficult to coordinate their duties clearly.

Their respective roles, however, are defined. Gardamo Security Service Company is conducting access control from the viewpoint of the “Cargoes and Vehicles (Drivers)”, Civil Security is responsible for “Public Assets”, and Maritime Police is responsible for “National Security” (Figure 1.6-16 and Figure 1.6-17).

For reference, Gardamo Security Service Company was paid US\$5,910 by APORTIL for its services with 29 persons in the month of August 2013.

Port prepares and issues 2 types of ID card and also 2 types of gate pass for the access control. The ID cards are issued for APORTIL staff (Figure 1.6-18) and for permanent port workers (Figure 1.6-19). The gate passes are for visitors (Figure 1.6-20) and for vehicles (Figure 1.6-21).



Figure 1.6-16 Staff of Gardamo Security Service



Figure 1.6-17 Civil Security & Maritime Security



Figure 1.6-18 ID Card for APORTIL Staff

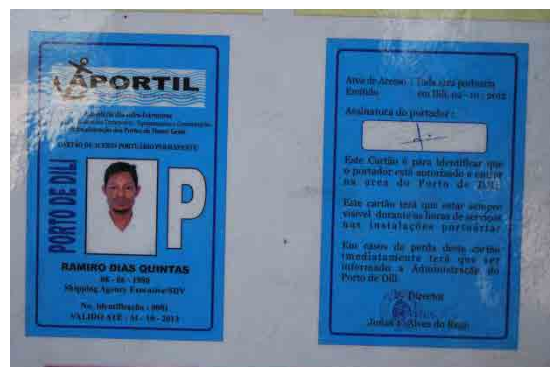


Figure 1.6-19 ID Card for Port Workers



Figure 1.6-20 Visitor Pass



Figure 1.6-21 Vehicle Pass

The surveillance of the land area is conducted every 3 hours by Gardamo Security Service Company under the instruction of APORTIL. However, the surveillance work of the water area is not under the jurisdiction of APORTIL. It is conducted by the Marine Police.

Regarding the activities of foreign donors, a German consultant has conducted the PFSA and developed the PFSP with STET, Singaporean consultant, in November 2013. Furthermore, GIZ has continued technical cooperation to APORTIL in order to facilitate the organization reform. In October 2013, JICA Team exchanged opinions with GIZ and STET in order to consider a port security scheme of Dili port in the future.

USCG has conducted capacity building for port security from 2008. Audits have been also done by the USCG periodically and recommendations have been submitted accordingly. USCG plans to visit the country again in December 2013 to carry out an audit.

1.7. Port Safety

1.7.1. Accident Records

APOLTIL has no records of cases of accidents or incidents which have occurred, But after 2000, it was reported that suspended cargo fell during cargo handling, but there are no detailed data indicating when it happed, what caused this accident, and how many people were injured.

In order to eventually create a safe port environment based on analysis of accidents, records of dangerous situations including near-misses must be prepared.

1.7.2. Safety Measures

Dili Port has prepared SOP (Standard Operation Procedures) for control of traffic passing through

its gates. It summarizes key points related to procedures and checks followed to manage movement through the gates in order to prevent unauthorized people and vehicles from entering the port area.

It has been confirmed that this SOP is in actual operation. Two organizations and one company (Civil Security, Maritime Police and Gardamo Security Service) are posted permanently at the main gate, where they conduct access control, but their respective areas of authority are not clearly demarcated. One of these is a private company, but they do not know the ISPS codes. And the SOP is not fully applied. Table 1.7-1 shows an outline of SOP.

Table 1.7-1 Outline of SOP

Standard Operating Procedure		
Entry Control Point Procedure (ECP)	Ferry Gate Guard	Guard Post Orders
1. Purpose	1. Purpose	1. Purpose
2. Policy	2. Policy	2. Policy
3. Definition	3. Definition	3. Definition
a. Gate runner	4. Responsibility	4. Responsibility
b. Fence jumper	a. General order	a. General Orders
c. Assessment zone	b. Control entry	b. Inbound Gate
d. Warning zone	c. Badge inventory	c. Drop-arm
e. Threat zone	c. Equipment inventory	d. Cargo Vehicle Clearance
4. Procedure	d. Baggage screening	e. Pedestrian Gate
a. Suicide bomber consideration	5. Procedure	f. Outbound Gate
b. Interview techniques		g. Port Pass Post
c. Entry control point		h. Ferry Gate
		i. Roving Patrols

Source: Standard Operational Procedures by Dili Port, Timor-Leste

1.8. Tibar New Port Project

1.8.1. Outline of the Development Concept

The Government of Timor-Leste is planning to create a new port at Tibar, 10 km to the west of Dili. This project was analyzed in the report “Public Private Partnership (PPP), Approaches to Port Development in Timor-Leste” published by International Finance Corporation (IFC) in 2011. The Government included the project in the “Strategic Development Plan 2011-2030” (SDP) as one of the key infrastructure development projects. SDP contemplates the start of the construction works in the short term (2015) and the opening of the new port in the medium term (2016-2020). SDP identified the

following shortcomings in the Port of Dili as reasons to support the Tibar New Port Project:

- Rapid increase of container cargo (annual increase of 20 % over the last six years)
- Lack of quay length resulting in a berthing backlog
- Limited space and no room for expansion
- Shallow draft (7.2 m)
- Congested access roads

The Ministry of Finance took up this project in “Preliminary Project Appraisals for the Infrastructure Program” in June 2011. The goal of the Tibar New Port Project is to facilitate trade flows by alleviating the port capacity constraints. The project aims to create a multi-purpose terminal and expand the container cargo handling capacity from the current 37,000 TEU/year. The “Preliminary Project Appraisals for the Infrastructure Program” listed areas of engineering and environmental concerns including the following: need of breakwaters, maintenance of the channel depth, siltation, impacts of seismic events, and resettlement of residents. The Government plans to implement this project by a PPP scheme and hired IFC as the transaction advisor at US\$ 600,000 in 2012. IFC incurs much higher costs in this advisory service and thus applies its donor fund. It considers the transaction advice as a means of technical assistance and capacity building for Timor-Leste.

1.8.2. Progress of the Project

(1) PPP Investor Conference

In order to attract private investors to infrastructure development projects, the Government, with the support of IFC, held a PPP investor conference in March 2013 in Dili. This conference was planned to invite private partners to two major infrastructure projects, creation of Tibar New Port and upgrade of the international airport. Preliminary project overviews for the projects were provided at the conference.

The project background of Tibar New Port was identified as follows:

- Limited draft and storage area
- Mixed passenger ferry and cargo operations
- No reasonable extension possibilities

The main objectives of the Government for Tibar Port development were listed as follows:

- To create port facilities to cope with the growing traffic
-

- To accommodate larger vessels
- To move all cargo handling operations from Dili
- To improve the efficiency of port services

Basic development scenarios of Tibar Port were proposed as follows:

- Phase 1 (up to 2027): Two berths (630 m) with dredging and reclamation works (60 % of yard pavement)
- Phase 2 (after 2028): 100 % of yard pavement
- A layout plan was proposed after comparing several layout options
- Landlord port model was proposed for PPP

(2) Transaction Structuring Report

Studies by IFC further progressed and the Transaction Structuring Report was released in July 2013 to get the Government's green light. Main points of the report are as follows:

- Tibar Bay Port will replace Dili Port which cannot cater for the increasing cargo
- Due to the strong economic growth, container cargo will increase from 42,000 TEU in 2012 to 450,000 TEU in 2040
- If no action is taken, the congestion at the existing Dili Port will result in an annual economic loss of over US\$170 million by 2044
- Government public procurement has experienced major cost and time overruns in past projects
- PPP will provide an access to private sector expertise and management discipline, while minimizing the need of subsidy
- Two berths (630 m in length and 15/16 m in depth) are recommended on the west side of Tibar Bay to cater for containers and general cargo
- Estimated initial construction/procurement costs are US\$257 million including quay walls, dredging, reclamation, pavement, buildings, and cargo handling equipment
- 30-year concession encompassing construction, financing and operation is recommended
- The government should receive a royalty payment of US\$10 per container as well as navigation and dockage fees while all other revenue should flow to the concessionaire
- Port assets will be transferred to the government after 30 years

- In order for the project to be viable, substantial government funding (Viability Gap Funding, expected to be 55% of the initial construction/procurement investment and equivalent to US\$148 million) is required
- Project EIRR: 33.2%, Equity IRR for the concessionaire: 20.9 %
- If the Government gives the go-ahead, the PPP contract will be put out to tender in August 2013 and bids will be evaluated in February 2014. Funding arrangements and EIA will be completed by January 2015 and then construction will commence in February 2015

(3) Latest progress as of autumn 2013

- The council of ministers approved the project on August 2, 2013. IFC's timeline expects to notify a tender call for PPP partners in the second half of 2013, determine the winning bidder in the first quarter of 2014, and start the construction works in 2015 (Figure 1.8-1). In line with the timeline, the Government of Timor-Leste proceeded to the invitation of non-binding expressions of interest (EOI) from interested parties in August. 47 companies including operators and contractors from across the world submitted EOI before the deadline of September 5. Around ten renowned port operators are included among them.
- IFC will seek the governmental approval of the PQ criteria in October. It will consist of three areas: port operation experience, financial strength, and construction experience. Another investor conference is expected to be held upon approval of the criteria. RFP will be announced in November and the winning bidder will be decided around February 2014 based on a two envelope tender scheme (the lowest bidder among those technically qualified will win the contract). IFC expects port operation to commence in 2016-2017 at the earliest.
- IFC proposes a concession scheme (design, build, own, transfer) for PPP in the Tibar New Port development after comparing government procurement, management contract, and concession. The concession scheme will become viable with a substantial amount of government subsidy for infrastructure development costs.
- IFC has completed the scoping for EIA.

Action	Date	GoTL Approval?
• Decision to go ahead	7 August 2013	Y
1. Marketing		
• Publish EOIs	15 August 2013	Y
• Meet with investors	30 August 2013	
2. Prequalification		
• Issue Request for qualifications	7 September 2013	Y
• Complete prequalification	30 September 2013	Y
3. Tender		
• Issue RFP and draft Contract	1 October 2013	Y
• Comments from bidders	30 October 2013	
• Consult with bidders	15 November 2013	
• Issue final Contract	30 November 2013	Y
• Bids Submitted	31 December 2013	
• Evaluate Bids	31 January 2014	Y
• Bid award	28 February 2014	Y
4. Conditions precedent/financial close	6-12 months	Y
5. Construction Starts	Late 2014/early 2015	

Source: IFC

Figure 1.8-1 Transaction Execution Timetable

- In order to capitalize on entrepreneurship, IFC proposes a performance-based tender requesting bidders to carry out detailed designs. Basic specifications such as the quayside depth (16 m), channel/basin depth (15 m), quay length (630 m), alignment in the Tibar Bay (to be developed in the west side of the Bay) will be fixed in the tender. Equipment will be procured in phases but reclamation and dredging will be carried out in one go to save the mobilization costs. Complete relocation of cargo activities except ferries from Dili Port will be a precondition of the tender.

Improvement of the road access between Dili and Tibar is underway as a part of the 28-km ADB road rehabilitation project between Dili and Liquica. A Spanish contractor won the contract for expanding the 6-km section between Tasitolu and Tibar to four-lanes at 21 US\$ million and started construction works in April 2013. The project completion is expected in 21 months from the start. ADB is studying a shortcut option bypassing the cape in the east of the Tibar Bay to accommodate the traffic of heavy trucks. If ADB and the Government approve the option, they will need a major variation of the construction contract. In this case, the project costs will increase by US\$ 14 million and the completion will be postponed by six months. In either case, the road access to Tibar will have been improved before the port starts operation.



Figure 1.8-2 Tibar Bay



Source: Transaction Structuring Report, IFC

Figure 1.8-3 Proposed Configuration of Tibar Port Development



Figure 1.8-4 Current Situation of the Candidate Site

2. Existing Capacity of Dili Port

2.1. Quay-side Capacity

Since Dili Port has only a short quay (L=289m), this port can accommodate only two or three vessels at a time. According to the ship arrival data of Dili Port, container vessels and cargo vessels on average wait at the anchorage area for berthing for two days and two weeks, respectively (Table 2.1-1). This is resulting in price hikes and shortage of goods in the market. Container vessels sometimes skip Dili Port to save ship costs and keep the calling schedule, resulting in cargo delivery delays.

Table 2.1-1 Average Waiting Time before Berthing at Dili Port (2012)

(Days)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
Container vessel	1.4	1.6	0.9	1.5	0.9	1.1	2.0	1.9	1.1	3.4	3.9	4.1	2.0
General cargo vessel	7.2	13.7	14.2	18.7	15.4	25.2	1.3	9.8	21.5	16.1	19.5	4.8	13.7
“Others vessel” ¹	0.8	1.2	0.6	2.5	2.3	2.1	2.2	3.4	3.4	2.5	1.7	0.2	1.9

Source: Ships Call Information of APORTIL (Vessels handled offshore or at a slope and those with irregular berthing time data are excluded)

The ship congestion is caused by the long berthing time of general cargo vessels. According to the ship arrival data of Dili Port, container vessels and cargo vessels on average stay at the berth for one day and five days plus, respectively (Table 2.1-2).

Table 2.1-2 Average Berthing Time at Dili Port (2012)

(Hours)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
Container vessel	29	30	28	22	29	23	29	27	23	20	26	36	27
General cargo vessel	126	102	130	170	120	108	99	144	161	121	167	109	130
“Others vessel”	14	10	10	6	12	7	25	8	21	20	13	11	13

Source: Ships Call Information of APORTIL (Vessels handled offshore or at a slope and those with irregular berthing time data are excluded)

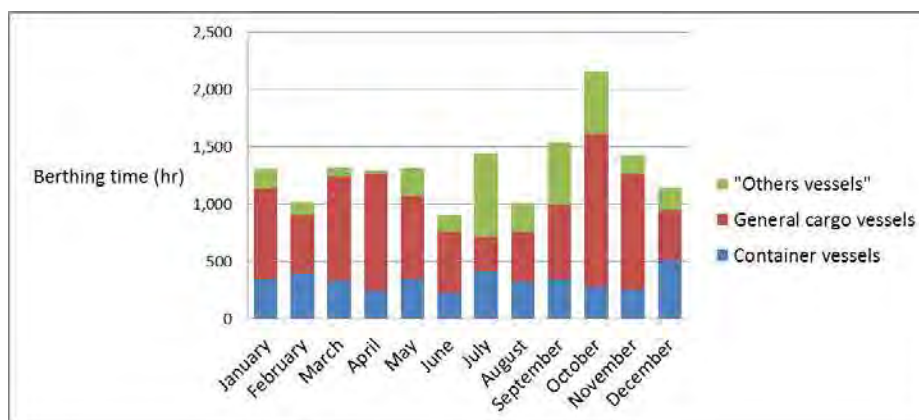
¹ In the Ships Call Information of APORTIL, “Others vessel” are mostly large tag boats

Due to the long vessel berthing time, BOR (berth occupancy ratio) is high in Dili Port. Since the quay is used as two berths (for two middle size cargo vessels), or three berths (for two middle size cargo vessels and one small vessel such as a service boat), the Study Team calculated BOR on a 2-berth basis and 2.5 berth basis (Table 2.1-3). In this analysis, the berthing time of container vessels, general cargo vessels, and “others vessel” are taken into account and that of non-SOLAS vessels (mostly small tag boats) is excluded. BOR exceeds the standard upper limit for a 2 berth group (65 %) in most of the cases and it is still high in some cases even on a 2.5-berth basis. This result indicates that the quay-side capacity is saturated unless some measures are taken to reduce the berthing time. Since conventional vessels (general cargo vessels and “others vessel”) occupy the quay much longer than container vessels (Figure 2.1-1), countermeasures need to be focused on the improvement in handling efficiency of conventional vessels.

Table 2.1-3 Berth Occupancy Ratio at Dili Port (2012)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
Total berthing time (days)	42.1	36.2	42.6	43.1	42.2	29.2	46.2	32.5	49.7	69.5	46.0	36.7	516
BOR as 2.5 berth (%)	54	50	55	57	54	38	60	42	64	90	59	47	56
BOR as 2 berth (%)	<u>68</u>	62	<u>69</u>	<u>72</u>	<u>68</u>	47	<u>75</u>	52	<u>80</u>	<u>112</u>	<u>74</u>	59	<u>70</u>

Source: Based on Ships Call Information of APORTIL (Vessels handled offshore or at a slope and those with irregular berthing time data are excluded)



Source: Ships Call Information of APORTIL (Vessels handled offshore or at a slope and those with irregular berthing time data are excluded)

Figure 2.1-1 Monthly Berthing Time at Dili Port (2012)

Judging from the gross cargo handling productivity, the performance of container handling by ship gears (8 box/hr on average) does not have much room for improvement (Table 2.1-4). On the other hand, general cargo handling (mostly rice and cement in bags, 29 t/hr on average) could be done more

efficiently (see Section 6.1).

Table 2.1-4 Gross Cargo Handling Productivity at Dili Port (2012)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
Container (box/hr)	9	9	9	9	6	11	6	7	9	10	8	7	8
General cargo (t/hr)	36	42	28	22	27	27	43	16	32	28	25	18	29

Source: Based on Ships Call Information of APORTIL (Vessels handled offshore or at a slope and those with irregular berthing time data are excluded)

2.2. Yard Capacity

Currently, multiple stevedoring companies carry out container handling inside the yard independently. No one thus has a clear idea about the ground slot plan of Dili Port. In order to gather basic data and calculate the yard capacity, the Study Team carried out a field survey to locate and count the number of ground slots (see Section 1.2).

Full containers and empty containers are stacked in separate areas in the yard staying for a different time span. In Dili Port, import containers are mostly full containers and export containers are mostly empty reflecting the trade pattern of Timor-Leste. APORTIL charges demurrage on import containers staying in the port longer than five days in order to reduce the yard congestion. The Study Team assumed the average dwelling time of full containers as five days for this reason. On the other hand, empty export containers are assumed to stay in the port for one day. Accordingly, yard capacity was analyzed for full containers and empty containers separately (Table 2.2-1). In this analysis, the effective stacking height was set as three considering the operational efficiency. This result indicates that the current yard is capacity-wise roughly balanced between import and export and can handle up to 120,000 TEU/year theoretically.

Having said that, it should be noted that the container yard of Dili Port cannot function as efficiently as average container ports due to several reasons such as: (1) the container yard is divided into two zones (east and west) and interrupted by ferry passengers' traffic in the middle, (2) ground slots are scattered in small groups particularly in the west zone, (3) multiple stevedoring companies are carrying out yard operations resulting in the lack of coordinated container positioning. These problems should be addressed to make the container yard capacity fully functional (see Section 6.1).

Table 2.2-1 Rough Estimate of the Yard Capacity of Dili Port

	Ground slots	Average dwelling time (days)	Annual turnover	Effective stacking height	Monthly peak ratio	Capacity (TEU)
Full containers (mostly import)	380	5	73	3	1.4	59,442
Empty containers (mostly export)	83	1	365	3	1.4	64,917

Source: Study Team based on a field survey. The monthly peak ratio was based on the 2012 APORTIL statistics data

3. Traffic Projection

3.1. Cargo Traffic

3.1.1. Containers

Container traffic in Dili Port dropped sharply in 2005/2006 reflecting the political turmoil in Timor-Leste. It exceeded the pre-turmoil level in 2008 and since then container throughput has been rapidly increasing at an annual rate of 19 %, doubling from 22,867 TEU in 2008 to 45,608 TEU in 2012. The Study Team estimated the future cargo traffic applying the following methods:

- Case 1 Time-series analysis based on the container throughput of the last five years
- Case 2 Correlation between GDP and container throughput
- Case 3 Analogical analysis based on the correlation between GDP per capita and TEU per capita in ASEAN region
- Case 4 Analogical analysis based on the correlation between GDP per capita and TEU per capita in island nations

Container traffic was estimated up to 2023 or ten years from now (Table 3.1-1). After Tibar Port starts operation, the entire container traffic will be shifted to Tibar. In order to reflect the size of real economic activities, the Study Team used non-oil GDP as a basis of the analysis. When non-oil GDP is applied, Timor-Leste is found to fit on the regression curve in analogical analysis as well. Economic indicators used in the analysis were taken from the following sources:

- Non-oil GDP (historical trend): IMF
- Non-oil GDP (future trend): SDP
- Population (historical trend): World Bank
- Population (future trend): UN
- TEU per capita in ASEAN countries: JICA Report for Yangon Port in Thilawa Area
- Container throughput (historical trend): APORTIL
- Rice import (historical trend): APORTIL

Since rice importers have been trying to containerize rice imports currently carried by conventional vessels in bags, the Study Team factored in a gradual shift of rice imports to container vessels (50 % shift in 2018, 100 % shift in 2023). Development of a competing container port in the south coast is not expected to have great impacts on Dili/Tibar during this study's planning horizon and thus not taken into account. Although all four cases show relatively high determination coefficient (>0.9), the Study Team would rather discard analogical analysis because the Timor-Leste's GDP per capita is much smaller than that of compared nations. Consequently, the Study Team estimates the container cargo in 2018 at around 90,000 TEU (double the volume in 2012, Figure 3.1-1). Container cargo in 2023 is estimated at around 120,000-140,000 TEU (triple the volume in 2012, Figure 3.1-2). These estimates are a little more conservative than that of the Due Diligence Report of IFC released in April 2013 (approx. 100, 000 TEU in 2018 and 150,000 TEU in 2023 in the Base Case). The estimate

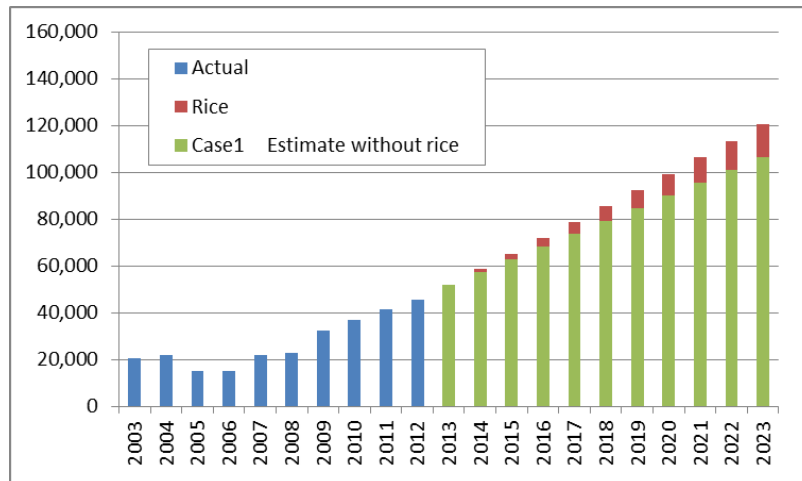
of the IFC report used a combined growth rate of population growth and non-oil GDP growth as the explaining variable.

Table 3.1-1 Estimate of Container Cargo Traffic in Dili/Tibar Port

(TEU)

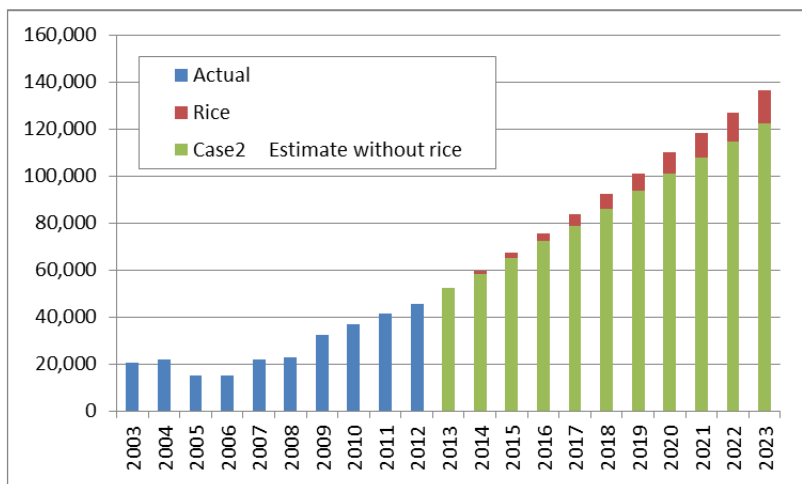
Case	Record (2012)	Estimate	
		2018	2023
<u>Case-1</u>	45,608	<u>85,420</u>	<u>120,589</u>
<u>Case-2</u>		<u>92,167</u>	<u>136,353</u>
Case-3		62,134	99,017
Case-4		89,488	133,498

Source: Study Team



Source: Study Team

Figure 3.1-1 Container Cargo Estimate (Case-1)

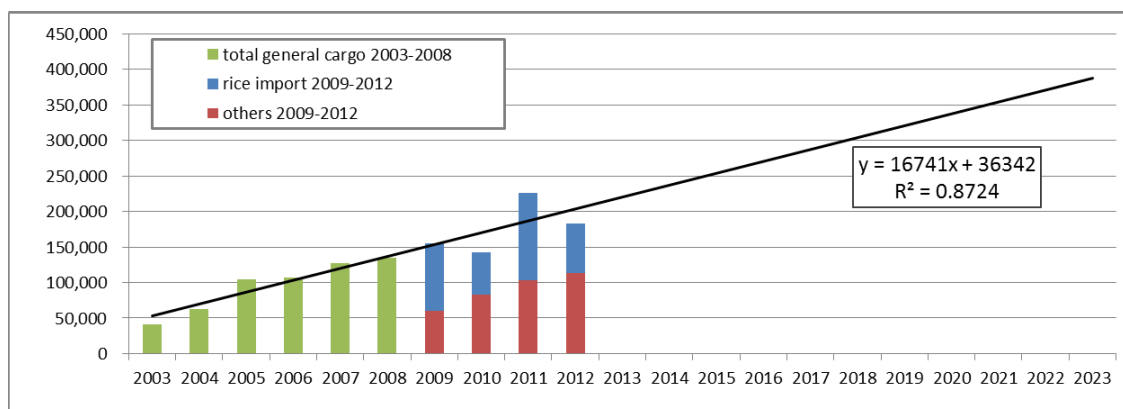


Source: Study Team

Figure 3.1-2 Container Cargo Estimate (Case-2)

3.1.2. General cargo

Unlike containers, general cargo traffic did not drop during the political turmoil and has been steadily increasing (Figure 3.1-3). General cargo traffic in Dili Port has increased at an annual rate of 18 % from 40,638 t in 2003 to 183,457 t in 2012.



Source: Study Team

Figure 3.1-3 General Cargo Trend

The Study Team estimated the future cargo traffic applying the time-series analysis based on the general cargo throughput of the last ten years. The Study Team then factored in a gradual shift of rice imports to container vessels as described in the prior section. General cargo volume is estimated to remain at the current level if the shift of rice import is taken into account (Table 3.1-2).

Economic indicators used in the analysis were taken from the following sources:

General cargo throughput (historical trend): APORTIL

Rice import (historical trend): APORTIL

Table 3.1-2 Estimate of General Cargo Traffic in Dili/Tibar Port

Record (2012)	Estimate	
	2018	2023
183,457	258,782	282,816

Source: Study Team

3.2. Ferry Passenger Traffic

Ferry passenger traffic in Dili Port dropped sharply in 2009 corresponding to the docking of the ferry boat (Figure 3.2-1). It has increased at an annual rate of 8.8 % from 36,887 in 2007 to 56,160 in 2012. The Study Team estimated the future passenger traffic applying the following methods:

- Case 1 Time-series analysis based on the traffic data of the last five years (excluding the data of 2009)

- Case 2 Correlation between population and passenger traffic
- Case 3 Correlation between GDP per capita and passenger traffic

Economic indicators used in the analysis were taken from the following sources:

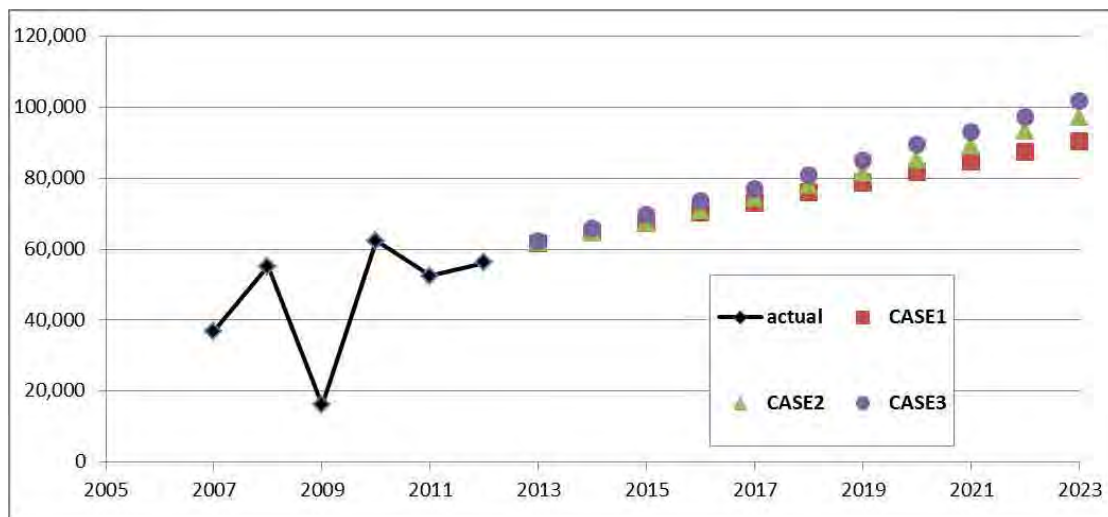
- Non-oil GDP (historical trend): IMF
- Non-oil GDP (future trend): SDP
- Population (historical trend): World Bank
- Population (future trend): UN
- Ferry passenger traffic (historical trend): APORTIL

The Study Team estimates the ferry passenger traffic in 2018 at 76,000-81,000 (35-45 % increase from 2012, Table 3.2-1, Figure 3.2-1). Ferry passenger traffic in 2023 is estimated at 90,000-102,000 (60-80 % increase from 2012). It should be noted that determination coefficient is not high in every case.

Table 3.2-1 Estimate of Ferry Passenger Traffic in Dili Port

Case	Record (2012)	Estimate	
		2018	2023
Case-1	56,160	76,027	90,292
Case-2		78,069	97,340
Case-3		80,690	101,738

Source: Study Team



Source: Study Team

Figure 3.2-1 Ferry Passenger Estimate

4. Institutional Issues to be Addressed

4.1. Port Management

4.1.1. Budgetary System in Timor-Leste

(1) Annual Time Line of Budgetary Appropriations

The Annual Action Plan including budget and human resources requests for the next year is submitted by each department to the Line Ministry in June or July. And then each ministry decides its own Annual Action Plan in August and submits requests to the Ministry of Finance in September. After that, the draft governmental budget which is decided by the Council of Ministries in November or December will be approved by the national parliament (Table 4.1-1). The fiscal year starts in January and ends in November (December is positioned as holidays) and it is allowed to implement multiple-year budgets for some projects. Table 4.1-2 shows budget approval competences using APORTIL as an example.

Table 4.1-1 Annual Time Budgetary (APORTIL, MTC)

Time	Procedures
May	Budget Estimation in APORTIL
June - July	Request to MTC (Annual Action Plan for next year by each direction)
August	Internal Discussion in MTC
September	Request to the Ministry of Finance (MoF)
November - December	The Council of Ministers
January - March	Parliament Approval

Source: Prepared by the Study Team based on information by APORTIL

Table 4.1-2 Budget Approval Competences (APORTIL, MTC)

	APORTIL	MTC	ESTATAL	MOF	Council of ministers
up to US\$ 250,000	Plan Propose	Approve & Submit to ESTATAL	Approve	Compiling the Budget Book	-
US\$ 250,000 - US\$ 1,000,000		Approve	-		-
more than US\$ 1,000,000		Approve	-		Approve

* ESTATAL=MSA (Ministry of State Administration)

Source: Prepared by the Study Team based on information by APORTIL

(2) Large-Scale Project in Timor-Leste

1) Review and Evaluation of Project by ADN

When the government of Timor-Leste implements a major project above a certain scale, the National Development Agency (ADN) which was established in 2011 is responsible for supervision such as verification of all documents regarding tender and inspection before payment, and also directly conducts projects instructed and approved by the Prime Minister.

ADN supervises various fields of large-scale projects such as the Infrastructure Fund projects above US\$ 1 million, Line Ministry projects between US\$ 500 thousands and US\$ 1 million and Additional projects financed by Contingency Fund managed by the Ministry of Finance (up to US\$ 2 million) including the Energy Fund Project and the Integrated District Development Plan (PDID).

ADN has developed and reviewed the ADN manual through the cooperation with JICA which includes procedures, templates, and checklists etc. for implementing above-mentioned projects. According to this manual, project categories under the jurisdiction of ADN are shown in Table 4.1-3 as of 2013 and 2014.

Table 4.1-3 Projects Category of ADN (2013 & 2014) (excerpted version)

Class of Project	Infrastructure Fund	Line Ministries Project	Additional Project	Special Projects under ADN
Funding Source	Infrastructure Fund	Line Ministry Budget	Contingency Fund managed by MoF	Funds allocated to ADN
Budget Range	Over US\$ 1,000,000	US\$ 500,000 to US\$ 1,000,000	Maximum US\$ 2,000,000	Up to US\$ 10,000,000
note			Only used for projects not foreseen in the budget	Upon instruction and approval by Prime Minister

Source: ADN Manual (Policy, Process & Procedure, Products), 20 SEP 2013, ADN & JICA

2) Project Evaluation before Contract Award by ADN (Infrastructure Fund Projects of more than USD one million)

Regarding the ADN's verification of the Infrastructure Fund before contracting award, the Line Ministry compiles tender documents with design consultants and the Major Project Secretariat (MPS) under the Ministry of Finance reviews the viability of the project, and then ADN verifies the documents (especially from the technical perspective) and coordinates with the Line Ministry. When the verification is completed, ADN passes them to the National Procurement Commission (NPC) to make tender. After that, CoM or CAFi (the Board of Infrastructure Fund) decides the winning tender (Figure 4.1-1). In this process, ADN should complete the verification of tender documents within ten calendar days after officially receiving them. ADN can request further information from the Line

Ministry if necessary.

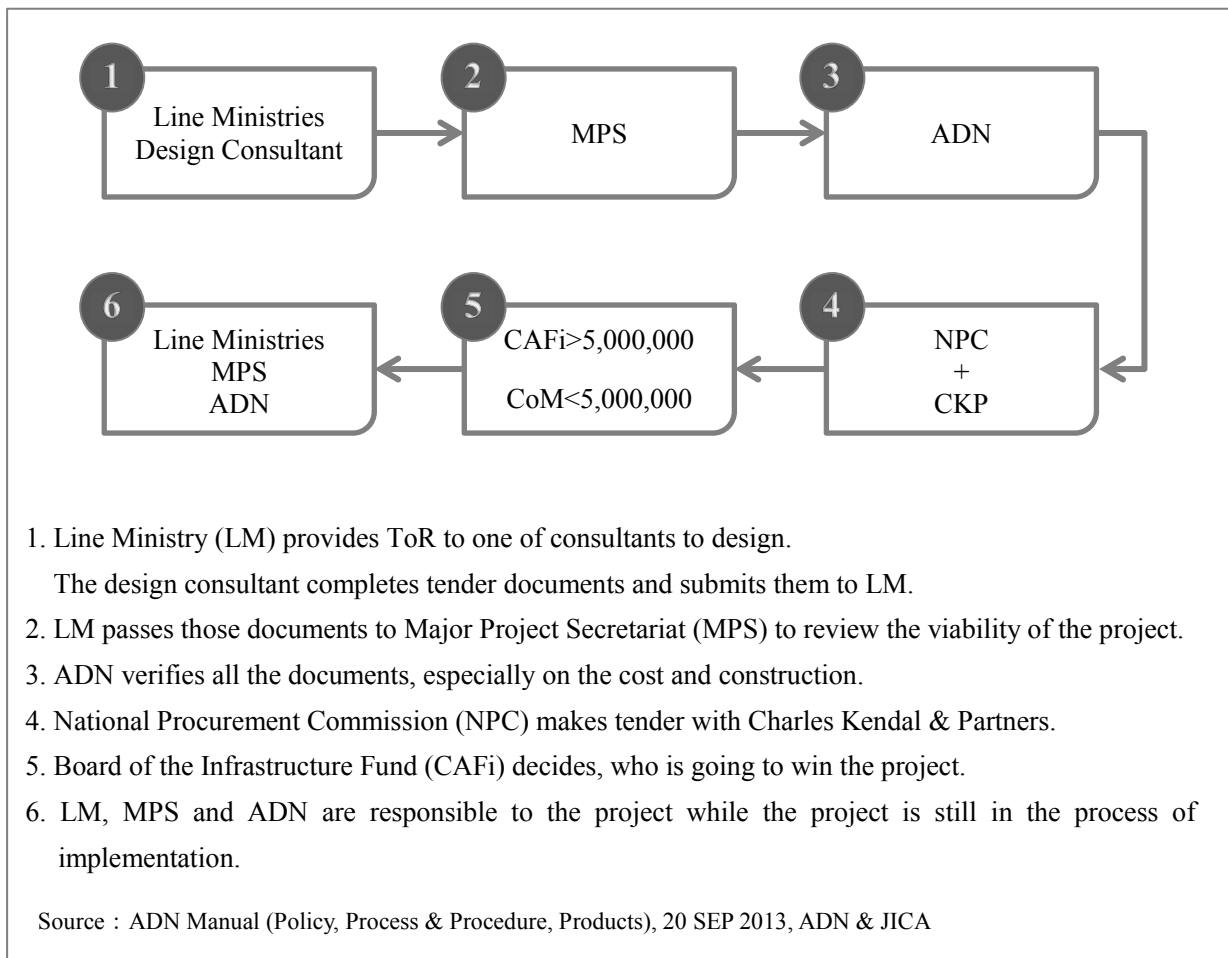


Figure 4.1-1 Evaluation Flow of the Infrastructure Fund Project

3) Project Evaluation before Contract Award by ADN (Line Ministry Project between US\$ 500 thousand and US\$ 1 million)

Line Ministry projects between US\$ 500 thousands and US\$ 1 million must be verified and inspected by ADN. Firstly Line Ministry prepares the contract as the owner of project and the design consultant makes up drawings of the project based on the approved ToR. After that, ADN verifies tender documents which are submitted by Line Ministry and returns verified documents for opening the tender processes in the Ministry or Secretary of Estate. (Figure 4.1-2)

ADN should complete the verification of tender documents within ten calendar days after officially receiving them. ADN can request further information from the Line Ministry if necessary in the same way as the Infrastructure Fund projects.

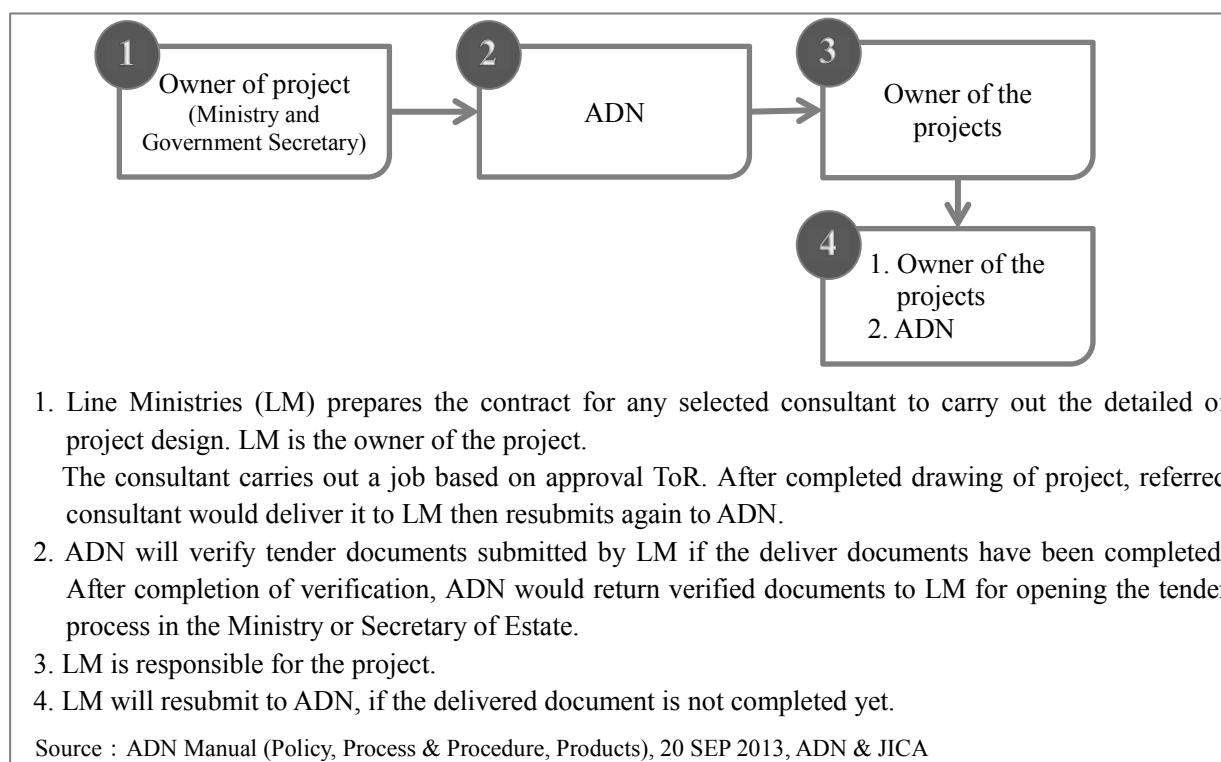


Figure 4.1-2 Evaluation Flow of the Line Ministries Project

(3) Budget Use Roles of Pertinent Agencies concerning Port Development

With regard to port development, roles which each agency should play in budget implementation are as follows.

Table 4.1-4 Budget Use Roles of the Pertinent Agencies concerning Port Development

	Plan & Propose	Review of Proposal	Approve	Procure	Supervise
Small Scale :up to US\$ 5,000	APORTIL :justification :BoQ :drawing etc.	-	MTC	MTC (designate)	APORTIL MTC
Medium Scale :US\$ 5,001-500,000		-	MTC	MTC (tender)	APORTIL MTC
:US\$ 500,000-1,000,000		ADN	MTC	MTC (tender)	APORTIL MTC
Large Scale :> US\$ 1,000,000		MPS,ADN :ToR, BoQ, drawing	CoM* or CAFi	NPC (tender)	ADN APORTIL MTC
Urgent Project (not planned) :US\$ 5,001-50,000		-	MTC	MTC (tender)	APORTIL MTC
:up to US\$ 2,000,000		MPS ADN	CoM* or CAFi	NPC (tender)	ADN APORTIL MTC

* less than US\$5million :CAFi, more than US\$5million : CoM (referred to Figure 4.1-1)

Source: Prepared by the Study Team based on information by APORTIL and the ADN manual

4.1.2. Budget Use in APORTIL

(1) Budgetary Process in APORTIL

Budget requests in APORTIL are carried out as in Table 4.1-5. Budget requests for technical matters like maintenance or repair of port infrastructure and building are made by the technical division, while those for utilities are made by the finance division; each division requests the budget for equipment as necessary.

All requests are compiled by the planning division and passed to the finance division for review before the Director decides the draft annual budget of APORTIL. Any tender process is conducted by the Ministry of Transport and Communications (MTC) and APORTIL will supervise the project together with MTC.

Table 4.1-5 Procedures of Budget Uses in APORTIL

	Maintenance / Repair of infrastructure	Building	Utility contracts	Purchase of Equipment
Request	Technical div.	Technical div.	Finance div.	Each division
Approval	Planning div. → Finance div. → Director			
Tender	MTC	MTC	-	MTC
Supervision	APORTIL & MTC	APORTIL & MTC	-	APORTIL & MTC

Sources: Prepared by the Study Team based on information by APORTIL

(2) Accounting of APORTIL

Changes in operating expenses of APORTIL are shown in Table 4.1-6. Total revenue reached US\$ 2,724 thousand in 2012, consisting of port tariffs like navigation fees described in Section 1.3.1, NAKROMA fares and rent & utility charges. Total expenditure has been increasing due to the growing numbers of cargoes and passengers and reached US\$ 2,492 thousand in 2012. For three years from 2010, APORTIL has achieved a budget surplus. However, budgetary allowances are always necessary for NAKROMA because expenditure exceeds revenue.

Meanwhile, investment costs are mainly financed by the Infrastructure Fund (repair of the APORTIL office in the past year was financed by the Consolidated Fund of Timor-Leste (CFTL)) which contributed US\$ 5,475 thousand to APORTIL in 2013. About 3/4 of it will be allocated to rehabilitation of Dili port and the remaining US\$ 1,300 thousand will be allocated to rehabilitation of regional ports such as Com, Caravela, Atauro and Manatuto. This seems to be in line with the Strategic Development Plan and the governmental programs in 5 years described in Section 1.1.2, however, the urgency and priority etc. aren't necessarily clear. It would be effective for APORTIL to compile a port facilities ledger to continuously grasp situations of facilities and urgencies of repair and improvement of facilities in the future.

Table 4.1-6 Changes in operating expenses of APORTIL

	2007	2008	2009	2010	2011	2012
Revenue	1,039,255.20	1,727,987.82	1,459,381.14	2,471,143.13	2,550,239.30	2,724,329.83
| Nakroma	357,615.10	437,168.00	112,088.00	865,163.80	533,903.00	433,428.00
Expenditure	523,510.93	507,566.67	2,354,000.00	1,415,906.86	2,252,713.22	2,492,000.00
| APORTIL	470,546.18	441,919.67	849,000.00	225,578.35	226,355.75	398,000.00
| DNTM	52,964.75	65,647.00	151,000.00	81,770.00	85,357.47	137,000.00
| Nakroma	- *	- *	1,354,000.00	1,108,558.51	1,941,000.00	1,957,000.00

※separated budget from the government

Source: Prepared by the Study Team based on the information by APORTIL

4.1.3. Organization

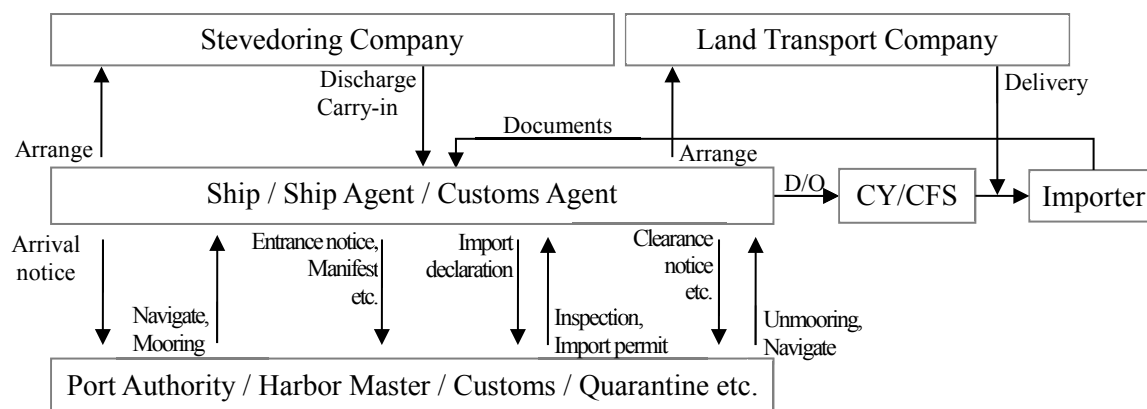
(1) APORTIL

With the growing number of cargoes and passengers at Dili port, it can be said that the structure of APORTIL and Harbor Master are not sufficient in terms of both quality and quantity. The operation division which controls the land side of the port without a port EDI system requires additional personnel to properly handle the increasing cargoes. The Study Team heard from APORTIL that the operation division requests more manpower every year but so far the requests have been denied.

Meanwhile, there is no staff currently assigned to 15 posts such as the Legal department, and DNTM, which is former Maritime department of APORTIL, must carry out all tasks related to maritime or navigation services (as Figure 1.5-2 for the present and as Figure 4.1-4 in the future).

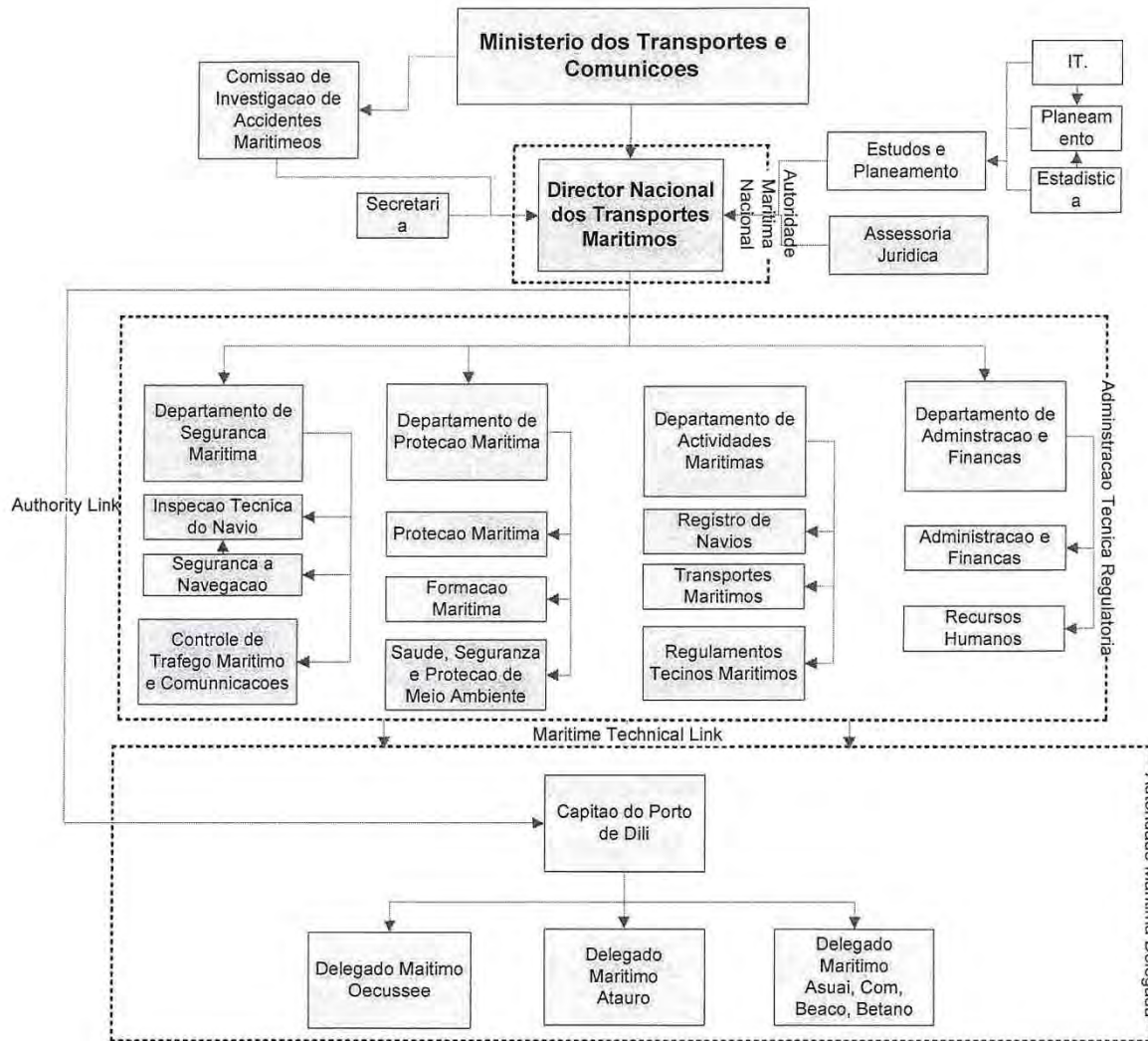
Furthermore, the most experienced staff only has around 10 years of work experience and there are not enough human resources with expert knowledge and practical experience in port related fields.

Therefore, capacity building is necessary for port security scheme based on ISPS Code (to be described) and for promoting efficient cargo handling.



Source: Study Team

Figure 4.1-3 Brief Outline of Port-related Procedures (Import)



Source: APORITL

Figure 4.1-4 Organization of DNTM (in the future)

(2) Customs

Private companies have requested customs, which is under the jurisdiction of the Ministry of Finance and carries out inspections on the east and west side of Dili port, to speed up procedures.

The Chamber of Commerce and Industry of Timor-Leste (CCITL) presented several recommendations to APORITL and Customs in July 2013 in order to improve the port operation and port-related procedures. Recommendations for Customs are as below.

- Allow copies of import documents to be submitted and follow up with originals once received.
- Introduce a fairer system where current penalty fee of \$300 is waived for errors or omission by importers during their first time and penalty applies only if same mistake occurs.
- Cargo inspections undertaken in covered area

- Customs should invest in CCTV to monitor the clearance processes for efficiency and transparency.
- Documents must be kept at Customs Office so that any staff member on duty can attend to customers. Director delegates responsibility to other staff when not in office.
- Extend working hours and introduce shift rosters to meet increasing demand.
- Provide adequate skills & resources to staff to ensure they can provide a high level of service.
- Information sessions for businesses so that they understand the procedures and processes for imports.
- When purchasing capital equipment, ensure that it comes with training, warranty and after sales service.
- Business community seeking a positive working relationship and communication with Customs.

(3) Institutional issues in the future

It is assumed that there will be a surplus of personnel in APORTIL when Tibar port starts its PPP scheme operation to handle international cargo shifting from existing Dili port.

For this reason, the shape of APORTIL's organization may have to be addressed in the future depending on to what degree resources will be moved into regional port development as there are many challenges to tackle such as port facility rehabilitation.

4.2. Maintenance

4.2.1. Personal assignment of organization

Port facility maintenance is under the jurisdiction of the Technical Section (TS). TS is staffed by three people: one Section Chief class member (Civil Engineer) and two technicians (an electrical engineer and a mechanical engineer). Under this system, there are not enough staff to maintain all the port facilities and there is an urgent need to hire more personnel.

Maintenance work is described in Section 4.2.2, but to perform these tasks, even making a moderate estimate, three more people must be hired: one assistant for each of the three engineers. Under present circumstances, periodical inspections needed to perform maintenance are not carried out, so that the state of systematic deterioration of port facilities is not fully known. But just considering repairs that must be made to continue day-to-day operations, procedures to perform repairs beginning with locations where deterioration is most severe and seven specific repair projects are scheduled for this year: dredging in front of the quay walls, repairing the pavement in the container yard, and repairing warehouses and fences, among them.

4.2.2. Maintenance work

(1) Workflow of maintenance work

The following are the major types of maintenance work.

- Performing periodical inspections
- Summarizing and evaluating results of inspections
- Deciding locations to be repaired
- Prioritizing locations to be repaired
- Approving budget measures
- Performing repairs
- Keeping records

Performing these tasks maintains facilities as required repair work is done. It is important that port functions which are actually operating are not shut down. But there are cases where, depending on the state of deterioration, instead of repairing or reinforcing a facility, it must be demolished and reconstructed. Table 4.2-1 shows standards for judging the degree of deterioration, and Figure 4.2-1 shows the flow of procedures from inspection to repairs.

Table 4.2-1 Standard of Deterioration Judgment

Items \ Criteria	O	I	II	III	IV	V
Corrosion of Steel Bar	None	Spotted rust stain on a concrete surface	Some rust fluid	Much rust fluid	Loose rust scale	Much rust scale
Crack	None	Spotted crack	Some crack	Some crack with few mm width as a crack index	Much crack with few mm width as a crack index	
Loss/Fall of Covering Concrete Reinforcement	None	None	Some loss	Some loss/fall	Much loss/fall	Too much loss/fall
Judgment	No need to observation in details		Observation in details		Repair works/Reinforcement	

Source: "Maintenance • Repairing Manual for Port Facilities" June 1999, Coastal Development Institute of Technology

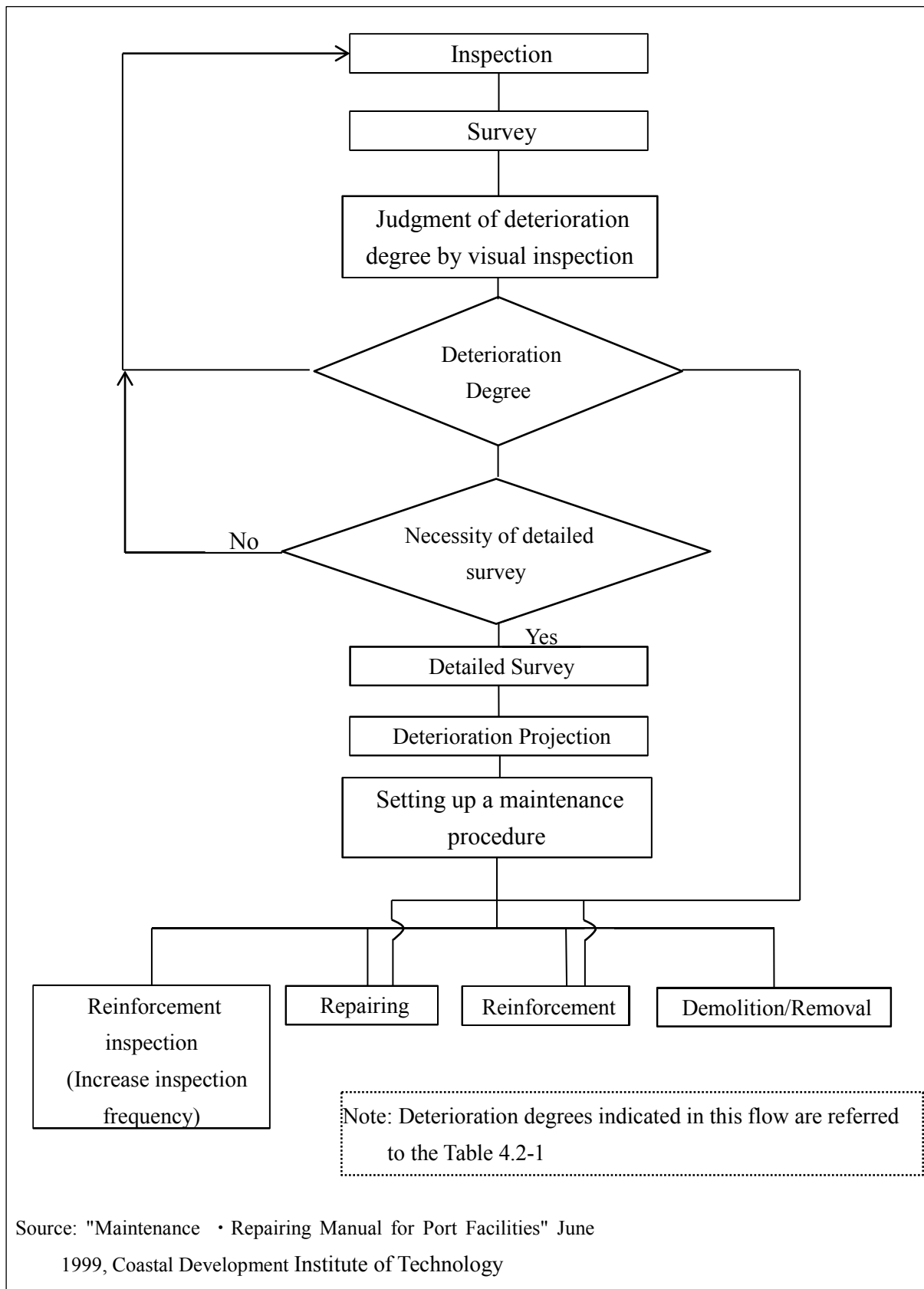


Figure 4.2-1 Inspection Flow of Maintenance

(2) Current status of periodical inspection and ideal inspection system

Although there is a department that performs maintenance in Dili Port, it actually does not perform sufficient maintenance because of its small staff and limited budget. But, a system to perform maintenance is being established by holding seminars, teaching maintenance procedures and inspection and survey methods, preparing manuals, and having the staff inspect slabs accompanied by experts.

Deterioration of port facilities begins immediately after they completed, and as it advances, their functions decline. It is important to do periodical inspections to clarify the state of progress of deterioration and repair facilities before their functions fail. And in order that this work be covered by the budget, priorities are determined to perform maintenance without obstructing the operation of the port facilities.

(3) Budget for maintenance

The maintenance budget is allotted from the government budget, and this fiscal year, a total of US \$4,175,000 was budgeted for maintenance of the facilities of Dili Port. Beginning with the best funded work, US \$1,800,000 was budgeted for dredging in front of the berths, followed by US\$950,000 for paving repair work in the west side container yard, US\$600,000 to fill the empty space behind berth GL5, and US\$250,000 for fence repair work (see Table 4.2-2, Figure 4.2-2).

In addition to this budget, APORTIL has budgeted income from Dili Port for staff salaries, and to cover the cost of maintenance of NAKROMA.

Table 4.2-3 shows APORTIL's own budget.

Table 4.2-2 Maintenance Budget of Dili Port on 2013

Location/Items		Budget	Descriptions
1	Dredging of Dili Port	USD 1,800,000.00	
2	Pavement at west container yard	USD 950,000.00	
3	Rehabilitation of three warehouse	USD 225,000.00	
4	Reclamation of rectangular open area at behind the berth BL5	USD 600,000.00	
5	Rehabilitation of fence	USD 250,000.00	
6	Rehabilitation of passenger terminal	USD 300,000.00	
7	Construction of security post at east gate	USD 50,000.00	
Total		USD 4,175,000.00	

Source: APORTIL

Table 4.2-3 Income and Expense of APORTIL on 2013

Items		Budget	Description
1	Wages and others of APORTIL	USD 262,000.00	
2	Running cost of BERLIN NAKUROMA	USD 2,436,000.00	
Total		USD 2,698,000.00	
1	Revenue of APORTIL	USD 2,440,296.00	Dockage, berthing, wharfage and commodities

Source: APORTIL

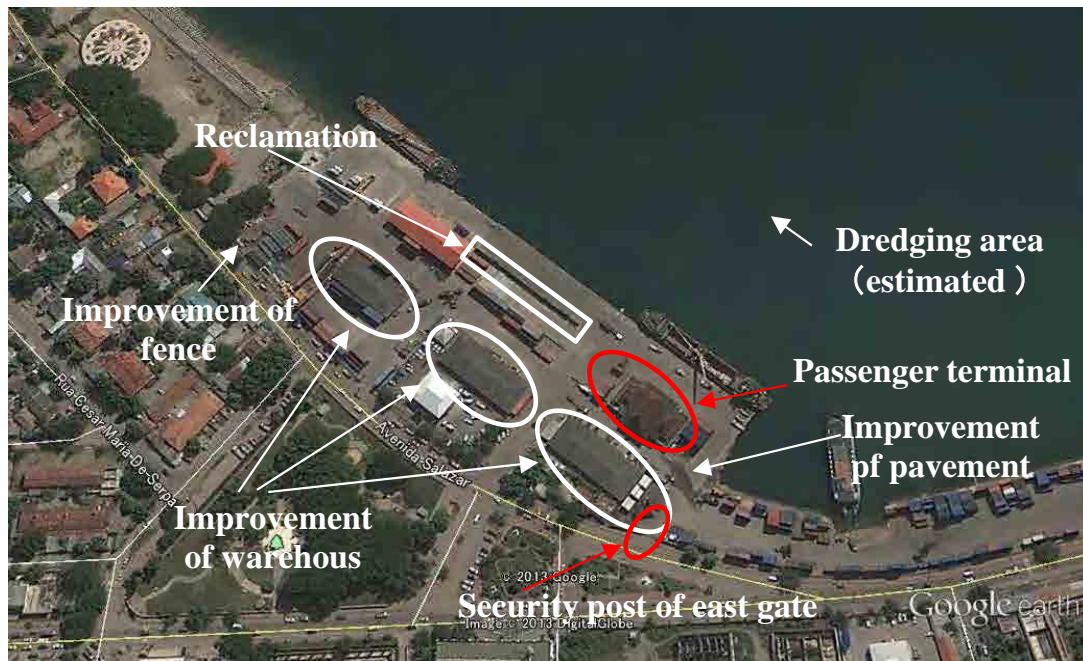


Figure 4.2-2 Location of Improvement Facility

5. Identification of Facilities in Need of Urgent Upgrades

5.1. Identification of Deteriorated Facilities

The facilities of Dili Port are scheduled to be repaired during 2013. In addition to these facilities, berths BL5 and BL6 are in need of urgent repairs to many locations where the reinforcing bars of slabs or beams are exposed. At another facility, a drainage pipe in the base of the Eastern container yard has been punctured and the ground surface has collapsed. Leaving such a collapse unrepaired will not only obstruct the operation of cargo handling machinery preventing efficient work, but it is predicted that it will cause cargo handling machinery to topple over, or collisions between cargo handling machinery, workers, and ferry passengers, so it must be repaired as quickly as possible.

And the budget for 2013 includes, funds to repair warehouses and the passenger terminal, to make for the shortage of yard space in the port, the removal of the passenger terminal and three warehouse as emergency measures would create space of about 4,600m². If it is possible to create a yard inside the port, this is worth farther consideration.

Regarding the relocation of the ferry facility, it is important to move facilities in the East Terminal to the west side of the port. This is discussed in Section 5.3.

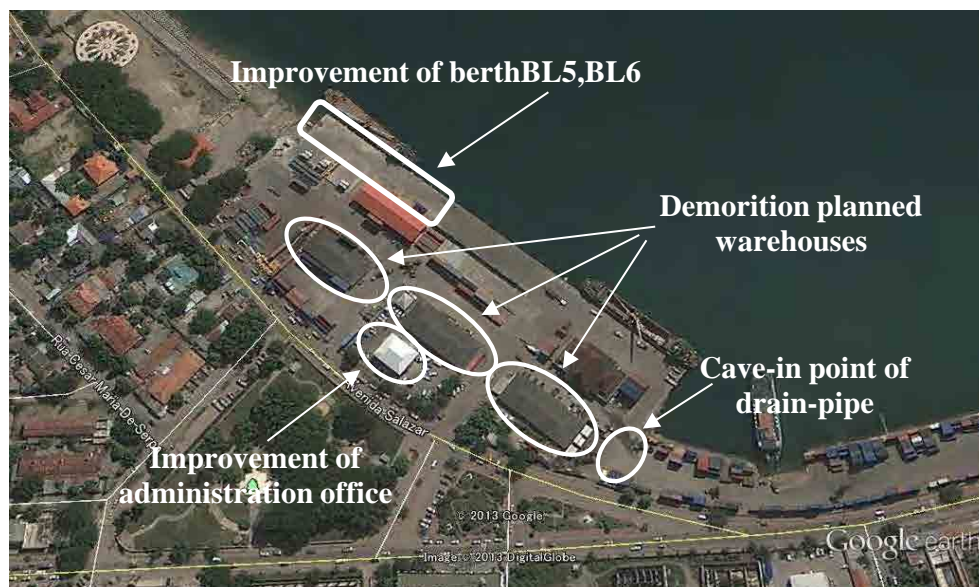


Figure 5.1-1 Facilities Requiring Repair

5.2. Prioritization of Facilities to be Upgraded and Additional Survey

Of the facilities requiring repairs discussed in Section 5.1, all require urgent action. However, the first priority is to repair the collapsed ground. Leaving this unrepaired is itself unthinkable, so it has to be take care of at once.

Of course, prompt repairs are necessary at BL5 and BL6 where, for example, a part close to BL4

where the steel reinforcing bars on the deck surface are exposed have been left unrepaired. A visual examination and a simple soundness evaluation of the concrete using a Schmitt hammer have been done to check conditions under the slabs, but no particular deterioration of the concrete was found with the average value of 9 locations found to be 23.5N/mm² (maximum 27.4N/mm² and minimum 20.1N/mm²).

And the visual inspection revealed several places on the covering concrete at the bottom edge of the beam where salt damage had caused the concrete to fall off, and particularly remarkable deterioration of beams of parts where ships berth. Although no critical conditions were found on the bottom surface of the slab, over 16 years have passed since it was constructed, and ADB carried out repairs on BL6 in 2002, but it appears that an additional coating was applied to the surface to prevent exposure of the steel reinforcing bars, and the concrete had lifted up or fallen off at many of these locations. Therefore, an inspection including an evaluation of all its functions must be done.

The results of the inspection were evaluated, and the rehabilitation plan must be revised based on this evaluation. In this case, it is sufficient to perform the minimum necessary level of repair work because all cargo handling in Dili port will be transferred to Tibar Port after it starts operating.



Figure 5.2-1 Inspection of Deterioration on BL5 and BL6

APORTIL has launched leveling of the land for use as the dry port at Tasitolu, and preparations for its use have started, rules for the use of the dry port need to be established including type of container to be stored there and the area of drayage cost. Considering the fact that ensuring a yard inside the port will contribute to the convenience of port users, this measure is worth considering. In this case, considering the question of whether the development of Tasitolu will be a waste, the answer is no, it will not. Tasitolu is closer to Tibar (by about 2km), and after opening the new port, it will presumably function as a facility supplementing the new port of Tibar, so it is possible to conclude that the development of the land will be effective.

5.3. Relocation of Ferry Facility

Ferry NAKROMA is in service between Oecusse and Dili and uses the East Yard of Dili Port as its landing location. There is a ferry use ramp at this location. The ferry lowers its ramp to connect with this ramp, allowing passengers and vehicles to enter and leave the ferry, but this creates a

dangerous situation, because the line of motion of passengers from this landing location to the East Gate crosses a container yard, sharply obstructing and reducing the efficiency of the container handling work. This ferry landing should be moved to the west side of the port. Doing this will end the obstruction of the container yard operation and guarantee the safety of the passengers.

This new location is at the west end of the port and a ferry use ramp has already been constructed, but sedimentation has reduced the depth of the water at this location below the stipulated value and nothing has been done to deal with this problem. At this same location, it is necessary to devise a method of guaranteeing the stipulated depth by, for example, extending the facility further offshore considering the impact of sedimentation (see Figure 5.3-1).



出典: Google earth

Figure 5.3-1 Relocation Site for New Ferry Facility (Assuming)

It is designed to accommodate two ferries: the NAKROMA that already serves the Dili- Oecusse route and a new ferry (see Figure 5.3-2) that will be added in the future.

The following are the specifications of the new ferry based on the information by KFW. Its LOA will be 67m, width 16m, draft 3.9m, passenger capacity 380, cargo loading capacity 500t, and landing style will be aft ramp style.

KFW issued the final report on the study of the ferry transport system in Timor-Leste named as “Feasibility Study for the MARITIME TRANSPORT CONNECTION BETWEEN THE NORTH AND SOUTH COAST OF TIMOR-LESTE” Final Report Text and Final Report Annexes on November 2012. In this report, ferry boat and regional ferry port on the ferry route between north and south coast of Timor-Leste had been examined. Four ports, Dili on the north coast, Beaco, Betano and Suai on the south coast, were focused on the investigation. Three types of ferry boat, large type (passenger 400), intermediate type (passenger 240) and small type (passenger 170), were examined. In Dili port, two types of platforms such as pier type and dolphin type with different development scales on the backyard are examined. Conceptual drawings of each type have been made and construction cost was

roughly estimated. Geotechnical investigation by boring has been conducted at three proposed locations: Suai, Betano and Beaco.

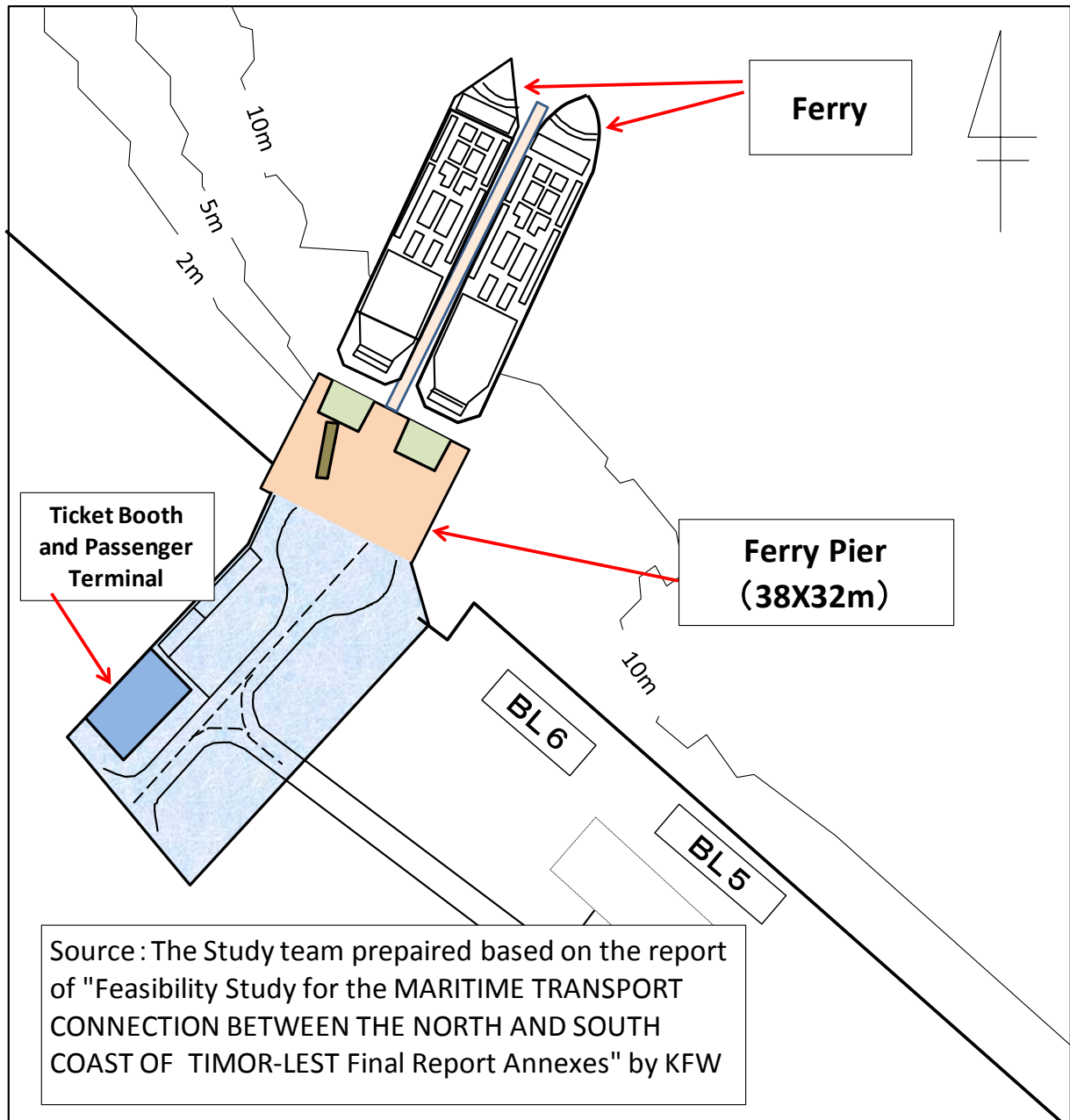


Figure 5.3-2 Plan of New Ferry Facility

The construction cost is estimated at approximately US\$ 8.5 million, and the rough estimation is shown in Table 5.3-1. The project period will be 10 months for basic design and inspection, 6 months for the detailed design, and 18 months for the execution. Tender will take 9 months, so the total construction period is estimated as 39 months (see Table 5.3-2).

5.4. Facility Rehabilitation Plan

The Study Team proposed rehabilitation plan of port facilities based on the result of site survey and discussion with persons to be related to rehabilitation and management section (see Table 5.4-1).

Table 5.4-1 On Going Projects and New Project Proposed by the Study Team

Project		Budget / Investment cost	Current status in the government	Priority	Remarks
1	Dredging of Dili Port	USD 1,800,000.00	Evaluation Stage of Bidding	Urgent	Urgent project
2	Pavement at east container yard	USD 950,000.00	Tender is not yet announced.	Urgent	Urgent project
3	Rehabilitation of three warehouse	USD 225,000.00	Tender is not yet announced.	Medium	
4	Reclamation of rectangular open area at behind the berth BL5	USD 600,000.00	Tender is not yet announced.	Urgent	Urgent project
5	Rehabilitation of fence	USD 250,000.00	Tender is not yet announced.	Medium	
6	Rehabilitation of passenger terminal	USD 300,000.00	Tender is not yet announced.	High	
7	Construction of security post at east gate	USD 50,000.00	Tender is not yet announced.	High	
8	Consulting service for the superstructure of BL5 and BL6	Around USD1M	• Applied to MTC on May 2013 • Waiting for budget approval in MTC	Urgent	
9	Consulting service for the improvement of regional ports of Atauro, Carabella, and Com	USD1.3M	• Applied to ADN on Aug. 2012 • Tender is not yet announced.	Medium	
10	Rehabilitation of the surface of BL5 and BL6	Around USD0.1M		Urgent	• Urgent rehabilitation - re-bar exposed area on BL5
11	Inspection of structural soundness of BL5 and BL6 (Slab, Beam, and piles)	Around USD0.3M		Urgent	• Survey should be conducted within the coming one year • Structural soundness up to 2020 will be evaluated in this survey.
12	Rehabilitation of the deck structure of BL5, BL6 (Slab, Beam, and Piles)	Medium-large (depends on the progress of deterioration)		(Depends on the progress of deterioration)	• Based on the evaluation of the survey, appropriate countermeasures will be planned. • Use of the BL5 and BL6 will be interrupted if major rehabilitation is conducted.
13	Deep-draft ferry wharf for New NAKROMA	Around USD8.5M		Urgent	• Construction should be completed before the ship delivery.
14	Installation of equipment /facility for port security	Medium		Urgent	• This project, together with project 5 and 7, is required to meet ISPS code.

Source: Prepared by the Study Team based on the information by APORTIL

6. Improvement of the Port Operation

6.1. Cargo Traffic

6.1.1. Quay-side

The analysis of the quay-side capacity and yard capacity (see Chapter 2) indicates that the main cause of the port congestion lies in quay-side rather than yard-side operations. In order to ease the quay-side congestion, reduction of the per-vessel berthing time is imperative. Since general cargo vessels stay at the quay much longer than container vessels, the following measures need to be taken for general cargo vessels:

- Increase of the quay-side productivity as the sea-side measure
 - Nighttime cargo handling supported by lighting poles
 - Improvement of general cargo unloading productivity by employing large trucks and pallets (adjusting the bag cargo position on small trucks is taking time)
 - Request of the use of vessels with ship gears so that unloading can start immediately
 - Containerization of rice transport



Figure 6.1-1 Quay-side Handling of Bag Cargo (rice)



Figure 6.1-2 Quay-side Handling of Bag Cargo (cement)

- Smooth evacuation of cargo from the port as the land-side countermeasure
 - Smooth evacuation of import cargo and customs clearance at dry port bonded warehouses
 - Timely arrangement of trucks corresponding to the ship arrival schedule

6.1.2. Yard-side

The container yard of Dili Port is not efficient due to the limited space (approx. 15,000m²), inconvenient alignment (separated into two areas), and a lack of coordinated operation. In order to increase the yard space, expansion of the yard or decrease of the dwelling time is needed. The Study Team identified alternative countermeasures including software approaches and hardware approaches to achieve these goals. Bearing in mind that Tibar Port will become operational before 2020, less costly approaches are recommendable.

- Software approaches
 - Extension of gate operation hours (A few hours' extension on weekdays by a shift system and the gate opening on weekends would be meaningful. Additional officials will be needed in APORTIL and customs office.)
 - Prohibition of un-stuffing by consignees inside the yard
 - Removal of the unutilized handling equipment from the yard
 - Unified yard operation by a single terminal operator (A concession or management contract will be needed in this case) or coordinated yard planning by APORTIL
- Hardware approaches
 - Demolition of underutilized warehouses and the passenger terminal building
 - Expansion of the East Yard
 - Creation of dry port(Additional equipment will be needed. From the viewpoint of transportation costs, it would be better to create the yard in the port's vicinity.)



Figure 6.1-3 Unutilized Equipment



Figure 6.1-4 Underutilized Warehouse

6.1.3. Recommendations of the Chamber of Commerce and Industry of Timor-Leste

In July 2013, the Chamber of Commerce and Industry of Timor-Leste (CCITL) presented several

recommendations to APORTIL and Customs in order to improve the port operation and port-related procedures. Recommendations for APORTIL are: (1) Continue 24 hours/7days operation to eliminate congestions and delays, (2) APORTIL install two overhead cranes (capacity at least 50 ton) for cargo unloading and clearance, (3) Vessels must be equipped with at least two overhead cranes in working condition, (4) Vessels that have completed unloading must vacate the dock within two hours to allow other vessels to come, (5) The dock has capacity for up to three vessels and this should be used to maximum capacity all the time, (6) Improve security inside the Port area; and for bulk cargo: (7) Unload 24 hour/7 days (with Police patrolling and cooperation in hot areas like Motael, bebonuk, Mandarin, Metiaut, Colmera, and Tibar, (8) If not possible, unloading from 6 am to 12 midnight; and for containerized cargo: (9) Allow more days for clearance (especially those with more than 10 containers in a shipment, (10) Containers that are awaiting clearance should not be mixed with those that have been cleared by Customs, (11) Cleared containers to be moved to the Exit Gate ready to be picked up, (12) Business community seeking a positive working relationship and communication with APORTIL.

6.1.4. Implementation of Countermeasures

Engaging stakeholders and building consensus among them is essential in improving the port operation mentioned in Section 6.1.1 and 6.1.2. The Study Team prepared tentative improvement plans to propose to APORTIL (Table 6.1-1, Table 6.1-2). APORTIL can act as the focal point of this convening a port users' meeting, showing improvement directions, and asking for cooperation from stakeholders.

Table 6.1-1 Improvement of General Cargo Operation (proposed by the Study Team)

Countermeasures	Stakeholders					Investment costs	Priority
	APORTIL	Customs	Stevedoring companies	Shipping companies/ agents	Consignees		
Nighttime cargo handling supported by lighting poles	⊙ (lighting poles and nighttime staffing)	⊙ (nighttime staffing)	⊙	○	⊙ (arrangement of trucks and warehouses)	Medium	Medium
Employment of large trucks and pallets	○(request)		⊙	○	⊙	Small	High
Use of vessels with ship gears	○(request)			⊙		Small	High
Containerization of rice transport	○(request)			⊙	⊙	Small	High

Smooth evacuation of import cargo and customs clearance at dry port bonded warehouses	○(request)	⊙	○	○	⊙(costs for additional drayage)	Small	High
Timely arrangement of trucks corresponding to the ship arrival schedule	○(request)		○	○	⊙	Small	High

⊙mainly responsible organization

○stakeholder

Table 6.1-2 Improvement of Container Cargo Operation (proposed by the Study Team)

Countermeasures	Stakeholders					Investment costs	Priority
	APORTIL	Customs	Stevedoring companies	Shipping companies/ agents	Consignees		
Extension of gate operation hours	⊙ (nighttime staffing)	⊙ (nighttime staffing)	⊙	○	⊙ (arrangement of trucks and warehouses)	Small	High
Prohibition of un-stuffing by consignees inside the yard	○(request)		⊙		⊙	Small	High
Removal of the unutilized handling equipment from the yard	○(request)		⊙			Small	High
Unified yard operation by a single terminal operator	⊙ (concession or management contract)		⊙			Small	Low
Coordinated yard planning by APORTIL	⊙		⊙			Large (IT system, specialists staffing)	Low

Demolition of underutilized warehouses	⊙		○	○		Small	High
Demolition of the passenger terminal building	⊙		○	○		Small	Low (potential for future use)
Expansion of the East Yard	⊙		○			Large	Low
Creation of dry port	⊙	⊙	⊙	⊙ (costs for additional drayage if delivery is at the dry port)	⊙ (costs for additional drayage if delivery is at the ship side)	Medium (pavement, equipment)	Medium (transport cost increase due to additional drayage and double handling)

⊙mainly responsible organization

○stakeholder

Some of the countermeasures described above are implemented in advanced ports (Figure 6.1-5-Figure 6.1-7).



Source: Hakata Port Terminal Co. Ltd.

Figure 6.1-5 Night Time Handling (Hakata Port, Japan)



Source: <http://www.tohkaikaiun.com>

Figure 6.1-6 Cargo Handling Using Pallets (Tokyo Port, Japan)



Source: <http://www.cikarangdryport.com>

Figure 6.1-7 Dry Port(Cikarang Dryport, Indonesia)

6.2. Passenger Traffic

There are significant safety problems concerning ferry passenger at Dili port since the ferry jetty is located between the east and west container yards and thus handling equipment frequently moves in

close proximity to passengers. In addition, some passengers enter the port at same gate as cargo trucks.

In order to resolve these problems, functions of passengers and cargoes must be separated from each other, therefore the rather drastic measure of moving ferry functions to the west side of the port corresponding to the new ferry boat donation by Germany seems to be necessary.



Figure 6.2-1 Problems on Passenger Handling and Relocation of the Ferry to West Side



Figure 6.2-2 Current Situation of West Side of Dili Port

7. Port Security Measures

7.1. Institutional Arrangements

IMO SOLAS Convention shall be ratified promptly. And according to the constitution of national port security law, the port security scheme shall be built up in Deli port. To realize this scheme, one administration headed by a Port Facility Security Officer (PFSO) shall be established by APORTIL.

7.2. Facility and Equipment Requirement

All facilities and equipment needed to comply with the ISPS Code requirements should be installed at Dili Port. Details are determined by PFSP which has been developed with the support provided by GIZ, however, the Study Team assumes the required facilities/equipment in Table 7.2-1 based on the result of the site survey and discussion with persons concerned at this stage.

Table 7.2-1 Facility and Equipment needed for Port Security

Facility Refurbishment, New Facility & Equipment, and Management System	Cost	Applicability of Japanese ODA
1. Facility Refurbishment		
(1) Fence		
1) Intrusion Protection of East Fence Seaside Edge	Small	
2) Partial Repair of Main Fence	Small	
3) Re-construction of West Fence (L=30 m)	Small	
4) Intrusion Protection of West Fence Seaside Edge	Small	
5) Cutting of Trees over Fence and Cleaning	Small	
6) Re-construction of Lighthouse Fence	Small	
(2) Gate		
1) Height Reinforcement of West Gate 2 (1,800→2,500)	Small	
2. New Facility & Equipment		
(1) CCTV Camera System (Fixed Type: 4 nos., Rotary Type: 3 nos.)	High	◎
(2) Monitor Room (1 no.)	Small	◎
(3) Security Light (West Edge: 1 no.)	High	◎
(4) Clocking System (12 Points)	High	◎
(5) Sign Board (Restricted Area, Speed Limit, and No Smoking etc.)	Small	
(6) Scanner for Passenger Luggage (1 no.)	Medium	◎
(7) Scanner for Passenger (1 no.)	Medium	◎

Notes: ◎ indicates strong possibility.

For reference, the ODA example of “Port Security Facility and Equipment” provided from Japan is shown below.

- Project Name: The Project for Improvement of Port Security System, Indonesia
- Contract Year: 2008
- Total Budget: 545 Million Yen
- Objective : To Enhance Capacity of Port Security of 8 Main Indonesian International Ports
- Facilities and Equipment:
 - 1) CCTV Camera: 54 nos.
 - 2) Security Light: 23 nos.
 - 3) Speaker: 29 nos.
 - 4) Scanner for Passenger Luggage: 2 nos.
 - 5) Scanner for Passenger: 3 nos.

Until Tibar Port starts operation, the restricted area of Dili Port should cover the entire land area of the port in order to comply with the ISPS Code because international cargo has been handled at Dili Port (see Figure 7.2-1). After Tibar Port starts operation, all cargo will be relocated from Dili Port to Tibar Port. However, if international cruise ship will be accommodated at the berth between BL1 and BL4 in Dili Port, restricted area will be changed from the berth to road boundary (refer to Figure 7.2-2).



Figure 7.2-1 Restricted Area until Tibar Port opens



Figure 7.2-2 Restricted Area after Tibar Port opens (assumed)

8. Future Plan of Dili Port

8.1. Impacts of the Tibar New Port Project

The operation of Tibar Port is expected to start before 2020 considering the progress of the project in the Government of Timor-Leste. According to IFC, Tibar Port will be developed by a concession scheme which assumes complete relocation of international cargo handling activities from Dili Port. If that is the case, large infrastructure investment in Dili Port should be limited to the improvement of the ferry terminal which will remain in Dili. Block 5 and 6 are deteriorated and will need some rehabilitation works to ensure cargo handling functions until Tibar Port starts operation. Since Timor-Leste will soon ratify the SOLAS convention, security/safety measures required to meet the ISPS code should be taken in Dili Port until the relocation of international trade activities.

As described in a previous section, a new ferry berth with a deep draft is needed to berth the new ferry to be provided by German grant aid. Since this boat cannot use a slope and thus requires a fixed berthing facility, the new ferry wharf should be completed before the new ferry boat is commissioned.

8.2. Dili Port after the Port Functions Relocation

All cargo handling activities except ferries will move away from Dili, once Tibar Port starts operation. After this, the current Dili port area will have great potential to attract tourists, visitors, and shoppers taking advantage of its seaside location. If the existing warehouses are demolished and all containers and equipment are removed, an extensive area along the sea can serve as a comfortable waterfront zone. In this case, the area to the west of the port will continue to be a seaside park (Figure 8.2-1). KFW proposed several configurations for the new ferry wharf. The area behind the new ferry wharf can be used for parking lots and a ferry passenger building. The eastern part of the wharf is still structurally intact and can accommodate cruise vessels. Dili Port is currently called by cruise vessels (Figure 8.2-2, Figure 8.2-3) but the badly damaged passenger terminal building (Figure 8.2-4) needs major renovation works to act as a gateway of the country receiving tourists from overseas.



Figure 8.2-1 Seaside Park to the West of the Port



Figure 8.2-2 Cruise vessel calling at Dili Port (MS Caledonian Sky)



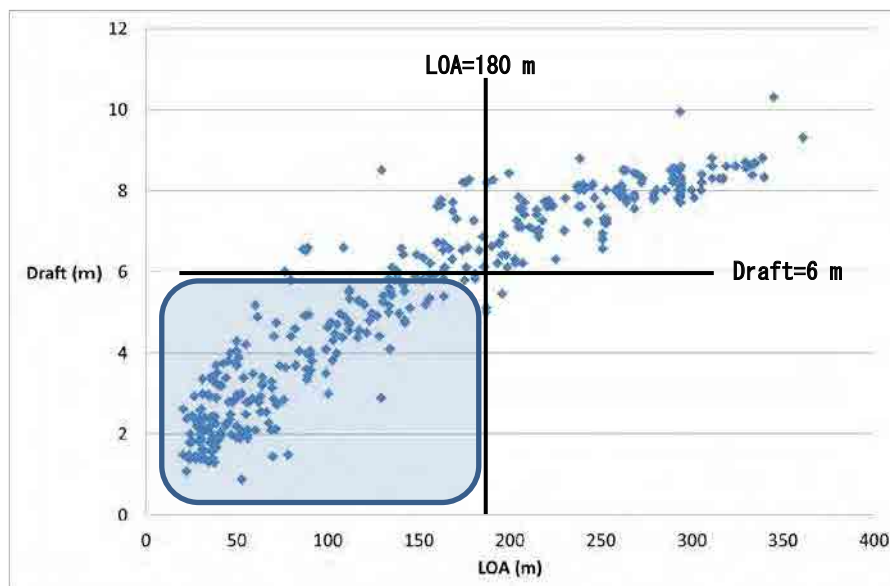
Source: Website of Noble Caledonia

**Figure 8.2-3 Cruise Route Map
(MS Caledonian Sky)**



**Figure 8.2-4 Badly Damaged Passenger
Terminal Building (under repair)**

Considering the quay length (180 m) and alongside depth (7 m), a sizable number of cruise ships can berth at the wharf and thus the use of the quay as a cruise terminal is meaningful (Figure 8.2-5). The land use plan after cargoes are shifted (excluding ferry) to the Tibar New Port should be reviewed from an urban planning perspective rather than port planning. Therefore, it needs to be carefully considered in the context of the urban development master plan for Dili which is being developed with the support of JICA and with facilitating consensus-building among pertinent agencies in Timor-Leste.



Source: IHS Fairplay, World Shipping Encyclopedia

Figure 8.2-5 Cruise Ships which can be Accommodated in Dili Port

Reference: Partnership with ASEAN on Transport Sector

(1) Outline of ASEAN

Timor-Leste has a close relationship with the Association of South-East Asian Nations (ASEAN) member nations both geographically and historically, but has not become a member of ASEAN in spite of aiming at early affiliation. ASEAN's population is around 600 million which is larger than the European Union (EU) and the North American Free Trade Agreement (NAFTA), but ASEAN is still in an early stage in terms of economical scale. ASEAN is expected to be united as "ASEAN Community" which will be a competitive economy under a unified market and unified manufacturing base by 2015.

The following Table shows a list of priority sectors for ASEAN integration as concrete measures. The common measures among these sectors are to be implemented extensively such as trade liberalization in both commodities and services, customs procedures for facilitating trade and investing, development of standards and authentication, and cooperation for intellectual property rights.

Table: Outline of ASEAN (year of 2011)

	ASEAN	Japan	EU	NAFTA
Population	597.91 mil. (100)	127.82 mil. (21)	495.26 mil. (83)	460.87 mil. (77)
GDP	2,135.1 bil. USD (100)	5,867.2 bil. USD (275)	17,552.2 bil. USD (822)	17,985.4 bil. USD (842)
GDP per capita	3,571 USD (100)	45,903 USD (1285)	35,440 USD (992)	39,025 USD (1093)
Trade	2,492.5 bil. USD (100)	1,678.5 bil. USD (67)	11,813.1 bil. USD (474)	5,380.0 bil. USD (216)

Source : Prepared by the Study Team based on Basic Data of Economic Statistics of ASEAN, Ministry of Foreign Affairs, Japan

Table: Priority Sectors for Integration

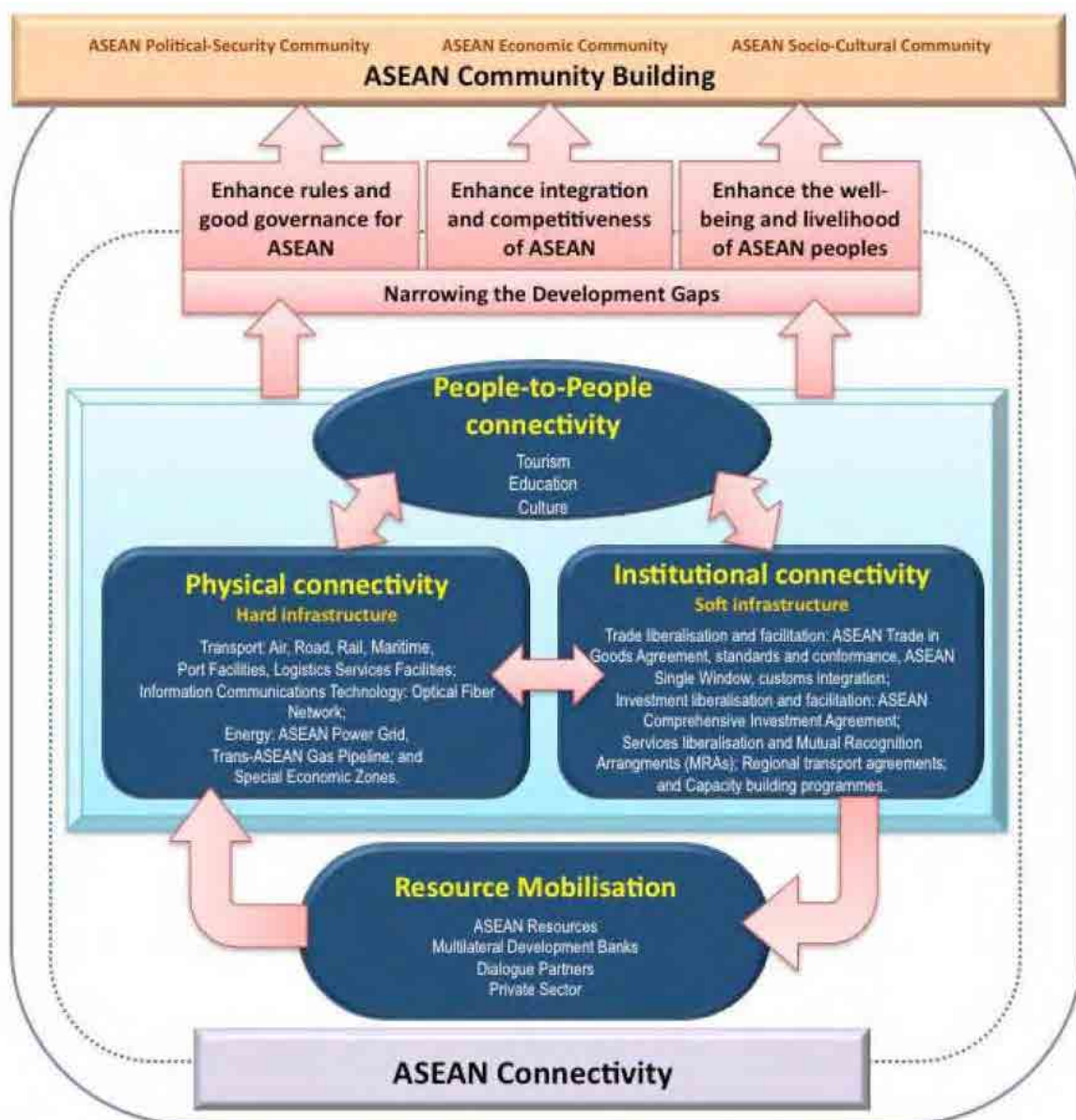
Agro-based products	Air travel	Automobiles	ICT (e-ASEAN)
Electronics	Fisheries	Healthcare	Logistics service
Rubber-based products	Textiles and apparels	Tourism	Wood-based product

Source : ASEAN

(2) Plans on Transport in ASEAN Region

1) Master Plan on ASEAN Connectivity

ASEAN Summit held in Hanoi on October 2010 adopted the Master Plan on ASEAN Connectivity (MPAC) which was formulated for the purpose of narrowing the development gaps, promoting ASEAN integration and ASEAN community building by 2015 through strengthening connectivity to make people, commodities and services move more smoothly both within and beyond ASEAN region. MPAC brings together three perspectives of “physical connectivity”, “institutional connectivity” and “people-to-people connectivity” including a total of 19 strategies and 84 actions.



Source: MASTER PLAN ON ASEAN CONNECTIVITY

Figure: Interaction between ASEAN Connectivity and ASEAN Community

Strategies concerning sea transport are as below. Other strategies of MPAC are “acceleration of trade and invest liberalization”, and “promoting people’s movements in ASEAN region” etc.

➤ Physical Connectivity

Strategy 4 Accomplish an integrated, efficient and competitive maritime transport system

Strategy 5 Establish integrated and seamless multimodal transport systems to make ASEAN the transport hub in the East Asia region

➤ Institutional Connectivity

Strategy 4 Develop an ASEAN Single Shipping Market (ASSM)

Strategy 7 Substantially improve trade facilitation in the region

The Study on the Roll-on/roll off (RORO) Network and Short-Sea Shipping, and the Implementation of the National Single Window by 2012 etc. are listed as the specific actions based on these strategies.

2) ASEAN Strategic Transport Plan (Brunei Action Plan 2011-2015)

ASEAN Transport Ministers Meeting held in 2010 adopted the ASEAN Strategic Transport Plan (Brunei Action Plan 2011-2015) including transportation programs to be strategically implemented from 2011 to 2015, which is intended to establish ASEAN Community and to realize the enhancement of linkage which is suggested in MPAC previously described.

Three goals and eight actions are pointed out regarding maritime transport (ports and maritime sector) in Brunei Action Plan.

Table: Maritime Transport Sectorial Goals & Actions in Brunei Action Plan

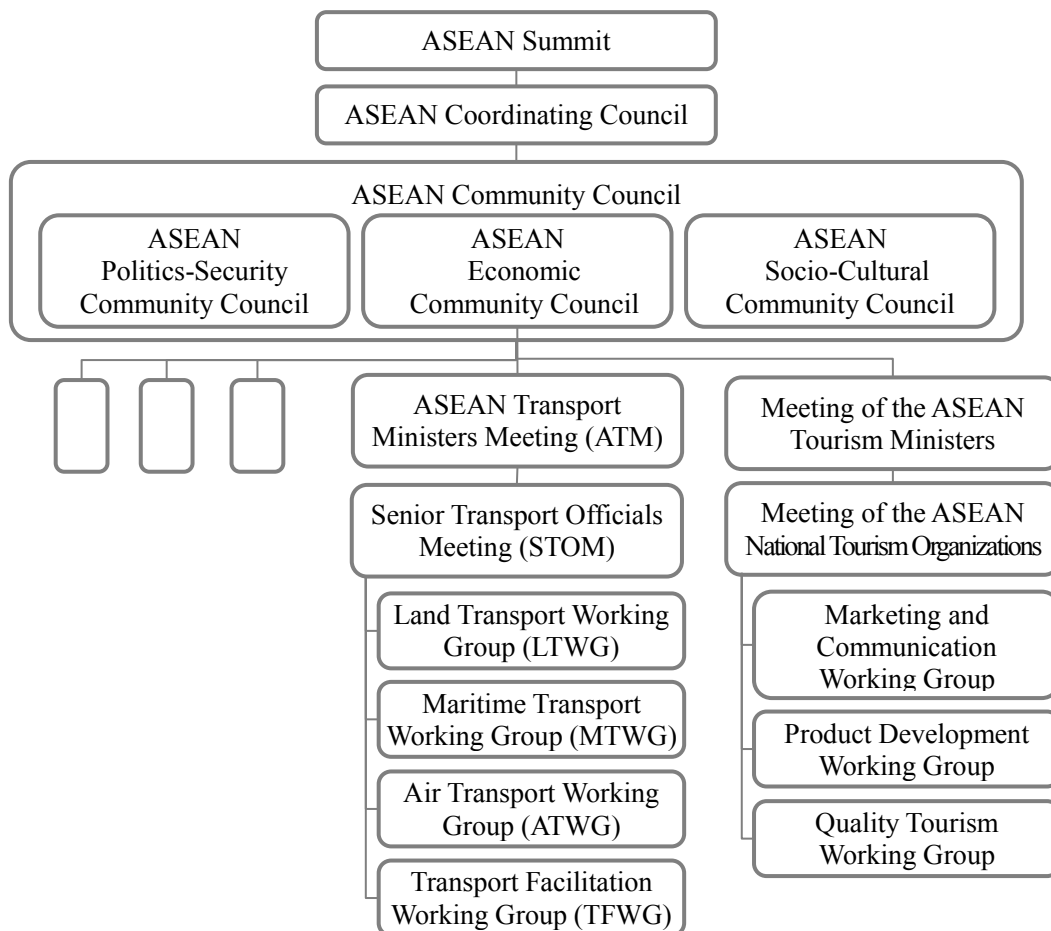
Goals	Actions
Accomplish an integrated, efficient, and competitive maritime transport system	Realise an ASSM by 2015
	Enhance the capacity of the 47 Designated Ports by 2015
	Establish efficient and reliable shipping routes, including RORO connections between mainland and archipelagic Southeast Asia, and strengthen the linkage with global and domestic routes by 2015
	Establish and enhance the Cruise Corridors by 2015
Develop safety navigation system and establish advanced maritime security system in line with international standards	Review ASEAN Near Coastal Voyage (NCV) Limits as per the requirements of Standard of Training, Certification and Watch-keeping (STCW) Convention by 2012
	Enhance Search and Rescue (SAR) capacity and capability through combined air and maritime SAR Exercises (SAREX) by 2015
	Develop human resources to strengthen port and shipping operations, including the introduction of advanced technologies for navigation safety, maritime security and environment preservation
Accomplish the Eco-Port and environmental-friendly shipping	Enhance the activity in cooperation with IMO, and promote to sign and implement the relevant IMO initiative Conventions

Source: BRUNEI ACTION PLAN 2011-2015 (ASEAN STRATEGIC TRANSPORT PLAN)

(3) Collaboration with ASEAN Member States

With the continuous economic growth of Timor-Leste, the port sector is expected to keep playing an important role in the economy. APORTIL therefore needs to not only upgrade the hardware but also to enhance the operational capacity and capability through institutional and legal development, organizational reform and human resources development corresponding to growing cargo and passenger demand. It may be more important to collaborate with ASEAN member states in the future because economic partnership with neighboring countries is assumed to deepen in the wake of the accession of Timor-Leste to ASEAN.

ASEAN has various conferences and meetings under the ASEAN Summit. The ASEAN Transport Ministers Meeting (ATM), Senior Transport Officials Meeting (STOM) and Maritime Transport Working Group (MTWG) specializing the maritime transport, port and maritime safety are specifically related to the transport sector including the port and maritime sector. In addition, ASEAN Connectivity Coordination Committee (ACCC) is organized to promote the projects of above-mentioned Master Plan on ASEAN Connectivity. In order to effectively collect information, exchange opinions and conduct negotiations at these meetings, the personnel who have sophisticated knowledge and communication skill are required. It will be important to develop such human resources from medium- and long-term perspectives.



Source: Study on Transport Circumstances of Major Nations, Ministry of Land, Transport and Tourism, Japan

Figure: Brief Overview of ASEAN Organization (Transport and Tourism sectors)

(4) Partnership between APORTIL and Pertinent Organizations at ASEAN

APORTIL is expected to be proactive in developing its own capacity of port administration and management through relationship-building and partnerships with pertinent organizations of ASEAN or its member nations.

Taking port security for instance, as Germany is providing comprehensive support including administrative reforms of APORTIL and capacity building of government officials as mentioned in Section 1.1.3, APORTIL will be expected to advance to a more self-sustaining stage in the near future. Continual implementation of port security through a partnership with ASEAN's initiative security programs would be mutually beneficial and effective as security issues are relevant to both Timor-Leste and the surrounding area.

In such a situation, it is the meaningful first step that an employee of APORTIL joins the JICA's Seminar on Port Security for ASEAN Countries held in November 2013 for the first time.

Some projects concerning port security have been practiced under the scheme of ASEAN-Japan transportation partnership such as the ASEAN-Japan Port Security Experts Meeting (held 9 times from 2007) and the ASEAN-Japan Port Security Joint Exercise (held 4 times from 2007). Japan should encourage ASEAN member nations to accept persons in charge of port security in Timor-Leste at these ASEAN meetings. On the other hand, the government of Timor-Leste should make efforts to attend port security projects as an observer under the ASEAN transportation partnership.